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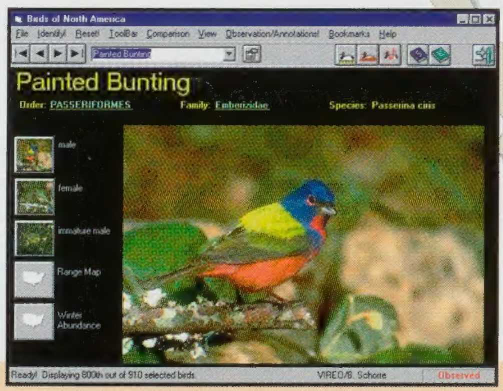
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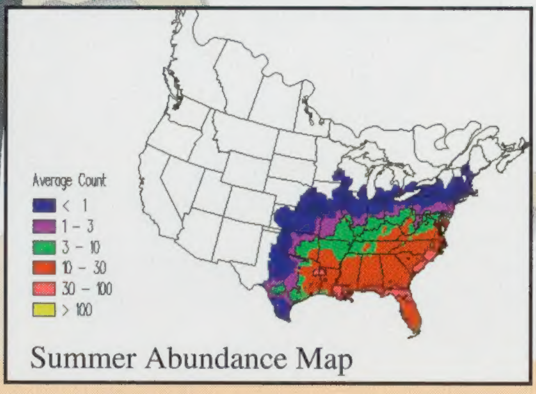

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LIVING BIRD

WINTER 1997 VOLUME 16 NUMBER 1

GREETINGS FROM SAPSUCKER WOODS

On the radio this morning the announcer said that a blast of arctic weather was due to hit the area tomorrow. Funny—to me the weather here has seemed pretty arctic-like for several weeks at least. Just last night it snowed again in Sapsucker Woods, leaving a thick padding of soft new powder. The trails were still pristine—unmarred by footprints or cross-country ski tracks—when I took my morning walk.

The woods always seem muted in winter, as though the sound is deadened by the dense blanket of snow. Walking the paths, all I hear are the crunch of my footsteps and the distant cawing of crows. Near the end of my daily circuit through woods, I stop for a few minutes and watch the waterfowl. The pond is completely frozen over except for a section of water that we keep open with a bubbler. There, several American Black Ducks, Canada Geese, and Mallards always hang on through the cold months.

The geese are the most entertaining. It's interesting to see the transformation they undergo as they descend to earth. High above they look spectacular, flying over in well-disciplined groups, each arranged in characteristic vees or chevrons. Even their voices sound better, ringing out and forming a melodious cacophony as they pass over. But as soon as they land, Canada Geese assume their ungainly, obnoxious alter egos—honking and hissing at each other, pushing to protect their share of open water or food.

As I watch, a squadron of them approaches the pond. Swinging their bodies from side to side as they lose altitude, the geese backpaddle powerfully before splashing down. A few of them land on the ice and slide comically for 10 or 15 feet before coming to a stop. One spins out of control on the ice before slipping over the edge with a great splash into the water. Sights like these are what keep me walking the trails in Sapsucker Woods each day and also what make it so pleasant to work at the Lab of Ornithology.

—Tim Gallagher
Editor-in-Chief

Cover: A muted winter background brings out the subtle beauty of a Varied Thrush. This was one wildlife portrait that nature photographer Darrell Gulin did not have to travel far to capture. The bird was perched behind his house in western Washington State.

Right: Sapsucker Woods looks quiet and peaceful after an early winter snowstorm. Photo by Tim Gallagher.

Back Cover: A Northern Mockingbird feeds on chokecherries in an Illinois yard. The bird provided an unexpected picture opportunity for Richard Day, who was in a blind photographing birds at a feeder when the mockingbird landed near him.

8 ITHACA'S FIRST LADY OF BIRDING
by Allison Childs Wells
Dorothy McIlroy studied ornithology with Arthur Allen in the 1920s. She's been part of the Ithaca, New York, birding scene ever since.

12 FROM PASSION TO PROFESSION *by Kristi G. Streiffert*
You don't necessarily need an advanced degree to make a major contribution to the field of ornithology.

16 THE BEST LAID PLANS *by Robert F. Rockwell, Kenneth F. Abraham, and Robert L. Jefferies*
Thanks to conservation efforts and to their own adaptability, Snow Goose numbers are booming—but can the environment support them?

24 SAVING THE SAN PEDRO *by Tony Davis*
After years of destructive cattle grazing, a vital river is reborn.

Departments

4 LETTERS

5 BIRDNEWS
Remembering Roger Tory Peterson

33 FOCUS
A case of hybridization

Columns

6 IN THE FIELD *by Jack Connor*
Free and Easy?

34 FLYING FIELD *by Mel White*
In Praise of Jinx Birds

38 THE CATBIRD SEAT *by Pete Dunne*
Numbing the Non-birding Mind

LIVING BIRD

WINTER 1997 VOLUME 16 NUMBER 1

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Letters

KUDOS FROM KAUFMAN

I was out of the country for a while this fall, so I've just now gotten around to the Autumn 1996 issue of *Living Bird.* After reading it cover to cover, I just had to write you to offer my congratulations. I enjoy every issue, but this one is really outstanding: it both describes and reflects the dynamic powerhouse that the Lab of Ornithology has become. All of us who are members and friends and admirers of the Lab will certainly regard this issue as a major reason to celebrate. Congratulations to you and your staff for a job well done.

Kenn Kaufman
Tucson, Arizona

MOB RULE

Jack Connor invites tales of mobbing when the mobbers lose ("Mob Scenes," Summer 1996). Last spring, near the airport in Geneva, Switzerland, I watched a Common Buzzard (*Buteo buteo*) under midair attack by several Carrion Crows (*Corvus corone*). Out of the blue, from much higher, another buzzard dove on one of the crows and hit it in a burst of black feathers. The crow fell 100 feet but recovered and flew off. This is unusual because the European Common Buzzard is not as robust as the American Red-tailed Hawk and, especially when immature, usually gets much the worst of mobbing by crows.

Anthony Piel
Divonne, France

Some years ago, at the end of a birding day in January, my friends and I saw an old male Snowy Owl with no dark streaks on him at all. He was sitting on top of a National Guard armory roof, and the way he was all hunched up we felt that he hadn't had much to eat that day. Anthropomorphic? Of course, but we were amateurs, not professionals. An American Crow about 200 yards off starting calling loudly and flying directly at the owl. The owl then turned its head around and screamed at the crow. This is the only time in my life I have ever heard a Snowy Owl make a sound, and none of my birding friends had ever heard one call either. What did it sound like? Almost like what you would imagine a bobcat, a lynx, or a mountain lion to sound like. The crow shut up immediately and got out of there as fast as it could. A priceless birding moment.

Henry Wiggin
Brookline, Massachusetts

Reading Jack Connor's "Mob Scenes" reminded me of an incident I witnessed that may stand as the boldest example of a bird defending its nest. In 1987, the company for which I work erected several Osprey nest poles near one of our manufacturing sites on the New Jersey coast. From time to time I hire a helicopter to take me on aerial surveys of the site. On one occasion I asked the pilot to fly near a new Osprey nest so that I could see if the parents had successfully begun their family. To my amazement, when we approached the nest at an altitude of 500 feet, the bird on the nest flew up directly toward the helicopter. She spread her wings, rolled on her back, and flashed her talons in a threatening manner toward the aircraft. She then returned to her nest. I looked at the pilot in amazement and asked if he had seen the Osprey. "Yes, I saw it," he replied, "and it would have lost!"

William G. Dalton
Union Beach, New Jersey

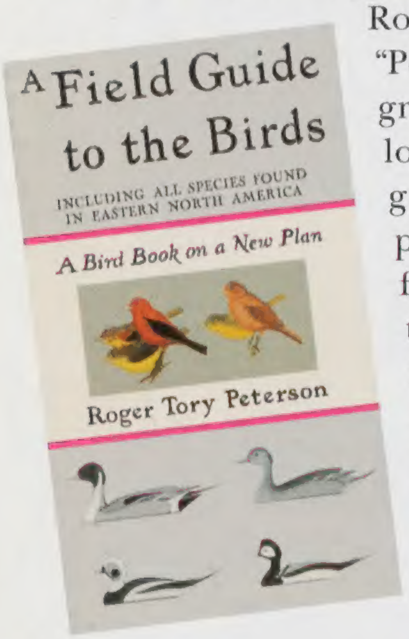
We welcome letters from readers. Write to The Editors, *Living Bird,* 159 Sapsucker Woods Road, Ithaca, New York 14850, or send e-mail to <livingbird@cornell.edu>.

BirdNews

Remembering Roger Tory Peterson

It is difficult to write a memorial about someone like Roger Tory Peterson. What can you say about a person who was already a "legend in his own time" at the age of twenty-five—a man who has been the most significant figure in the field of birding for the greater part of the 20th century? Simply stated, Roger was born on August 28, 1908, in Jamestown, New York, and passed away last summer, just a month short of his eighty-eighth birthday. But in the years between, he gave the world a simple method for learning bird-identification skills and introduced countless thousands of people to the fascinating world of birds.

In his famous first book, *A Field Guide to the Birds*, published in 1934, Roger laid out the "Peterson system," grouping similar looking birds together, then emphasizing the differences between them, often using arrows to point out distinguishing characteristics—the buffy rump of a Cliff Swallow, the chestnut cheek patch of a Lark Sparrow. "This handbook," wrote Peterson in the preface to the first edition, was "designed to complement the standard ornithological works, a guide to the field marks of Eastern birds, wherein live birds can be run down by impression, patterns, and distinctive marks, rather than by anatomical differences and measurements that the collector would find useful." So simple and yet so revolutionary in its approach, Peterson's field guide opened wide the doors of bird study to a new generation of birders and naturalists. His influence has been felt ever since.


A Field Guide to the Birds
INCLUDING ALL SPECIES FOUND IN EASTERN NORTH AMERICA
A Bird Book on a New Plan
Roger Tory Peterson

I first met Roger at a book signing many years ago when he was visiting the West Coast. What I remember about that day was his enthusiasm and friendliness—his genuine interest in what birders of all levels had to say. For many of them, he had been the spark that originally kindled their fascination with birds. That was certainly true for me. I had received his *Field Guide to Western Birds* for my tenth birthday, and it really meant a lot to me that day years later when he signed my, by then, well-thumbed copy.

In this picture taken in the 1950s, Roger Tory Peterson (at right) spends time birding with Lab founder Arthur Allen and his wife.

In his lengthy career Roger received accolades and awards virtually unprecedented for a self-trained naturalist—honorary doctorates from 23 prestigious universities, the Brewster Award from the American Ornithologists' Union, the Geoffrey St. Hilaire Gold Medal from the French Natural History Society, a Linnaeus Gold Medal from the Swedish Academy of Sciences, and many, many more. And he was twice nominated for the Nobel Peace Prize. But probably most meaningful to him was the Presidential Medal of Freedom—the highest honor an American civilian can receive—which was presented to him by President Carter, himself an avid birder and longtime admirer of Roger Tory Peterson.

On page 12 of this issue we've included an article about how, in the field of ornithology, birders without advanced degrees sometimes cross the line from amateur to professional and make meaningful contributions to the science. Roger, who is mentioned prominently in the article, is a classic example. Though he studied art as a young man, he had no formal training in ornithology. And yet the contributions he made to ornithology, birding, and bird conservation have worldwide significance.

Roger Tory Peterson had a longtime relationship with the Lab of Ornithology and was formerly a prominent member of our administrative board. As I mentioned briefly last issue in my "Greetings from Sapsucker Woods" column, Roger pushed for the Lab to create a publication that would present ornithological research and other information of interest to bird enthusiasts in a popular format, accessible and interesting to birders and scientists alike. And he suggested the name *Living Bird*. For that and so many other things he did for the well-being of birds and the people who appreciate them, we are eternally grateful. — *Tim Gallagher*

In the Field

FREE AND EASY?

by Jack Connor

May you soar like a vulture

TURKEY VULTURE BY CLIFF BEITTEL

In imaginary worlds all flying is soaring. Superman, Green Lantern, Mighty Mouse, and the rest of the comic book heroes I tracked in my youth flew with their arms straight in front of them, apparently gaining all the thrust they needed from their take-off leap and all the lift they needed from their capes. Peter Pan, Wendy, and the rest of that Disney gang held their arms out to the side, needing them only to steer; gravity was defeated by fairy dust.

And you don't flap either, I'm willing to bet, whenever you dream you're flying. In our fantasies the rules of physics are suspended and flight is a magic carpet ride. No flaps, no sweat.

In the real world, however, gravity rules with a heavy hand. Staying aloft requires tremendous muscular exertion for almost all flying animals, most of whom must flap constantly. Only a tiny minority can soar—that is, gain height while gliding—and all of these are birds. The low-altitude glides of flying fish last only seconds, as do the leaps of "flying" frogs and the other few amphibians and reptiles able to glide. No mammals can soar, not even bats. Insects have become the most diverse animals on earth, thanks largely to their aerial abilities, but none that I know truly soars. In North America some of the larger butterflies—monarchs, tiger swallowtails, and a couple of others—glide from time to time and ride updrafts occasionally, but, generally, they gain little altitude and must resume flapping after a few moments.

Even among birds, the ability to glide is not universal, and the ability to soar is rare. You will never see a loon, rail, goose, duck, hummingbird, kingfisher, woodpecker, quail, pheasant, flycatcher, wren, kinglet, thrasher, thrush, vireo, warbler, finch, sparrow, or blackbird soaring into the sky. (You will see few of them gliding much at all.) These birds, like most birds worldwide, lack the aerodynamic design that soaring requires. Their wings are too stubby, their tails are too short, their bodies are too heavy, or some combination of the above.

Those birds that are able to soar—albatrosses, vultures, hawks, gulls, and a few others—do not defeat the laws of physics, of course. They can gain height while gliding only because their bodies are relatively light and their wings and tails very large, and because our planet is a windy place. Birds can soar only by capturing turbulence in the air and converting it into lift.

Albatrosses and the other seabirds that soar have wings that look like those on glider planes—long and narrow (high-aspect) wings that enable them to ride the winds pushed upward off the ocean surface by waves. Vultures have shorter, broader wings than albatrosses, but their bodies are light relative to their total wing and tail area, and they can splay their primaries so that each feather works like a high-aspect, glider-plane wing. They soar by riding the winds pushed upward by mountains and forest edges or by riding thermals—bubbles of turbulence rising from warm ground into colder air.

Unlike cartoon characters, birds can't soar indefinitely or in all circumstances. Dead-calm seas force albatrosses to the surface, where they must wait out the days until the winds pick up again. Similarly, rain and snow trap vultures on their roosts. An interesting cost/benefit ratio explains these limitations: long wings and light musculature make soaring easier; short wings and heavy musculature make flapping easier. And so, the better the soarer, the weaker the powered flyer; the better the powered flyer, the weaker the soarer.

At the powered-flyer end of the spectrum, we might place hummingbirds, short-winged and heavily muscled, who are able to fly in all directions (even backwards) at high speed, but who cannot glide even momentarily. At the opposite end of the spectrum are albatrosses and vultures, whose long wings and limited flight muscles make them unable to fly by flapping alone.

Lately, I've been wondering whether a very different cost/benefit ratio explains the behavior of several less-specialized soarers. The puzzle began for me because I have been so frustrated over the last several summers trying to locate Broad-winged Hawks for the state breeding-bird atlas project. These birds are common in our area, and, as everyone who has watched their migration flights knows, they are capable soarers. In his wonderful book, *How Birds Migrate*, Paul Kerlinger notes that the Broad-winged Hawk's glide ratio (distance gained versus distance dropped) is 11 to 1, far better than the monarch butterfly's 3 to 1 and not far from the vulture's 14 to 1. But searching for broad-wings during the last few summers, I realized how seldom I see them soaring from June through August. They seem to spend most of their days hidden from sight. Why is that? Why not take a free ride into the sky?

Other birds also soar hour after hour every clear day during migration but do so much less often on their nesting and wintering grounds. The list below is my breakdown of some familiar species. Can you find a cost/benefit ratio that explains why the birds in the first category take advantage of winds and thermals so much more regularly than those in the second? Do you see the same pattern I think I do?

I'll give you one hint by admitting that I didn't know where the Red-tailed Hawk belonged on the chart. Red-tails seem to fit somewhere between the two groups. They soar more often than those in the second category but less often than those in the first. The behavior that makes soaring so rewarding for the year-round soarers is one that red-tails sometimes perform; and the behavior that makes soaring so costly for the seasonal soarers is also one that red-tails sometimes perform.

Year-Round Soarers

Turkey Vulture
Black Vulture
Bald Eagle
Herring Gull
Common Raven

Seasonal Soarers

Broad-winged Hawk
Cooper's Hawk
American Kestrel
Northern Harrier
American White Pelican

The answer (I think): the year-round soarers eat carrion; the seasonal soarers chase only live prey. Soaring may seem free and easy to us fantasy flyers, but even for birds whose physiology makes it possible for them, riding the wind comes at a price.

Time spent aloft is time lost from foraging, unless you can forage as you float, as do vultures, Bald Eagles, Herring Gulls, and Common Ravens. Dead prey doesn't move, so carrion-feeders need not worry about being so far from their prey that they can't chase it down. The seasonal soarers, on the other hand, need to stay close to their targets. A mouse 500 feet below a soaring Broad-winged Hawk is a mouse that won't be caught. Broad-wings spend their foraging time more efficiently posed on tree limbs waiting to pounce on the first animal that crosses only 10 or 15 feet below.

Is this analysis too simple? Several less-familiar, year-round soarers—Mississippi Kite, Magnificent Frigatebird, Zone-tailed Hawk, and others—didn't make my list, but each is a special case, I think. The kite eats dragonflies on the wing; the zone-tail is a trickster, imitating the thermal-riding vultures so it can make sneak attacks on unsuspecting live prey. Other birds don't seem to fit the analysis so easily, I'll admit. Wood Storks, for example, if my memory serves, soar frequently yet do not eat carrion. Does anyone have an explanation for their behavior? Why do storks soar so often? And Bald Eagles, which definitely belong in the year-round list, eat ducks, turtles, and other live prey frequently. Can eagles afford to soar because they dive so fast and so powerfully and their prey moves so slowly? I'm not sure. I'd be interested to hear any comments from readers, or any alternative thoughts about the whys and why nots of year-round soaring.

In the meantime, may you soar like a vulture in your next dream. ■

ITHACA'S FIRST LADY OF BIRDING

Dorothy McIlroy was not only present during the making of Ithaca's fascinating birding history, she was an active participant

BY ALLISON CHILDS WELLS

When famed ornithologist and Lab founder Arthur A. Allen was teaching Cornell University students about birds more than half a century ago, Dorothy McIlroy was there. When world-renowned bird artist Louis Agassiz Fuertes gave an animated talk about one of his adventures in the late 1920s, Dorothy was there. And she was there in the early years of the Ithaca Christmas Bird Count and for the precursor of the Lab of Ornithology's Monday Night Seminars. In fact, Dorothy McIlroy was not only present during the making of Ithaca's fascinating birding history, she was an active participant.

Mention to Dorothy her contributions to Ithaca birding, though, and she graciously shrugs them off. "I don't think I've done much more than some of the other people," she says, then adds with a chuckle, "Of course, I go back longer—I'm surprised anybody still knows who I am!"

Local birders often refer to Dorothy, who is approaching 90, as "Ithaca's First Lady of Birding." Ned Brinkley, a widely respected birder who lived in Ithaca when he was a Cornell graduate student, says, "Dorothy's intensity is a quiet one, driven equally by a subtle aesthetic appreciation of the spirit of wild birds and by a desire to know more about the local avifauna."

Dorothy put her knowledge and dedication to good use as a coordinator for the New York State Breeding Bird Atlas, a project documenting the distribution of the state's breeding birds. Greg Budney, curator of the Cornell Laboratory of Ornithology's Library of Natural Sounds, was renting Dorothy's basement apartment at the time and recalls, "She'd get up before dawn, and I'd hear her typewriter going late into the night. She was so enthusiastic and dedicated—always happy to be doing what she was doing." She also served for several years as a regional editor for *The Kingbird*, a journal of New York birdlife that publishes important records and short papers.

But perhaps Dorothy is best known for her work on *Birding in the Cayuga Lake Basin*, a publication produced by the Cornell Laboratory of Ornithology. Published in 1974 and updated in 1993, the manual remains invaluable to both local and visiting birders, providing an annotated checklist of area birds as well as descriptions of and directions to more than 70 of the best birding areas near Ithaca, New York.

Every bit as remarkable as her contributions are Dorothy's unique experiences as a lifelong birder. Taken under the wing of Peter Paul Kellogg—who with Arthur Allen pioneered bird-song recording at the Lab of Ornithology—and later Allen himself, her memories offer a fascinating insider's view of Ithaca birding in its early years.

Dorothy was a fifth-grader living in Rochester, New York, when she became captivated by pictures of birds she saw in a magazine her mother received as a teacher at the Rochester School for the Deaf. She began exploring her backyard in search of these beautiful creatures and soon discovered a swamp not far from her home. "I spent all of my free time over there," she says. "I borrowed my mother's mother-of-pearl-and-gold opera glasses so I could see the birds. I'm amazed now that she trusted me with them, but I never dropped them." It was around that time that her father gave her a Chester Reed bird guide, the same checkbook-size guide used by Roger Tory Peterson in his youth. Though a far cry from the guides Peterson went on to create, the Reed guide helped lay a foundation for Dorothy that she built on all her life.

In high school, Dorothy pursued her interest in the sciences and was one of two girls who took every math course offered. This peculiarity caught the attention of one of her classmates who'd graduated a few years ahead of her. He'd returned to high school to take some courses he needed to gain admittance to Cornell University. "He wanted to get acquainted with that 'weird girl' who was taking advanced math," Dorothy remembers. That classmate was none other than Peter Paul Kellogg. One day when they were studying at her house, Kellogg said, "Oh, listen to the oriole singing out there." That was when Dorothy first realized it was possible to identify birds by their songs.

Kellogg encouraged Dorothy to come to Ithaca to take Arthur Allen's summer-school course in ornithology, which she did several summers in the 1920s, while she was a math and physics major at the University of Rochester. In Allen's course the students had to make their own "field guides." "In Lab," she explains, "Doc Allen had us color in drawings in our lab notebook, from bird skins he had. These had to be very detailed; you had the skin in front of you so you had no excuse. The more drawings you colored in, the more of a guide you had."

Students in Allen's class also took early morning bird walks twice a week, often at Sapsucker Woods and Stewart Park, which have remained Ithaca birding mainstays. "The streetcars weren't running that early in the morning, and there were no such things as buses then. So we left campus at 5:00 A.M. to get to Stewart Park by 5:30." A challenge, she admits, but it was during that class, with help from the new Bausch & Lomb 6x30 binoculars her dad gave her, that everything came together for her as a birder.

Though Dorothy married soon after college, her professional ambitions remained. She says that she had been promised a position on the faculty of Cornell University if she could get a doctorate. "I thought, oh, that'll be easy," she says. She and her husband, Malcolm, moved to Newburgh, New York, where he'd been hired as an electrical engineer. Dorothy had planned to enter graduate school, but the stock market crashed that same fall and, though Malcolm didn't lose his job, a pay cut made it impossible for Dorothy to pursue her education. "But," she says triumphantly, "I've kept up birding as a hobby all these years."

In 1952, the couple moved back to Ithaca, where Malcolm had accepted a professorship at Cornell. Dorothy put her physics background

DAVID G. ALLEN

Dorothy's desire to know more about local avifauna began at the tender age of 10. Years later and still curious, Dorothy (far right) kisses her hand, producing a squeaking noise to draw an elusive bird out of hiding.

to use on his engineering projects—he invented an analog computer—and was also immediately swept back into the Ithaca birding scene. "Doc Allen took me in like an old lost friend," she recalls fondly.

This meant making sure Dorothy was invited to the ornithological seminars that took place on the top floor of Cornell's Fernow Hall. Because the speakers were always Allen's students talking about their research projects, the talks weren't advertised to the general public. But over the years they evolved into what has become the Lab of Ornithology's Monday Night Seminars.

Another change Dorothy has seen is in the Ithaca Christmas Bird Count. In Allen's time, the Christmas count was by invitation only, and, of course, Dorothy was among those always asked to participate. "Doc's grad students always came back for that count. It was really quite a thing," she says. After the count, the troupe returned to Allen's for dinner, the report sessions, then a talk. "The best speaker was Fuertes," she says. "He had bird skins and monkey skins—he used his hand to make a monkey skin talk. Oh, it was just fascinating."

Many of the places Dorothy once birded are no longer the habitats they used to be. Stewart Park is one example. "There used to be wonderful elm woods down there, full of migrating warblers in the spring." Sadly, Dutch elm disease killed most of the trees, and severe storms also did considerable damage. She adds, "I was very disappointed when they chopped up the cattails in front of Stewart Park. We lost our Least Bitterns and our Marsh Wrens." She also misses Arthur Allen's Saturday morning bird walks, which she helped lead. "Doc Allen was a big draw, so you often had a lot of people who didn't know anything about birds. It was an opportunity to teach them." Some people brought their entire families, she notes, and attendance sometimes reached 100 in a single morning.

Perhaps the most dramatic change of all, says Dorothy, is in the sport and science of birding itself. "It's just mushroomed. In the early days, I used to say I should carry a camera with me, I got so many stares while I was walking around with my binoculars, looking at trees. Now, it seems to be accepted everywhere." She should know; she's gone birding in a major portion of the world, including Scandinavia, much of Europe, and South America.

Shown here in 1928 with her new binoculars at her side, Dorothy (far right) was already an avid bird watcher. Through the years she watched public interest in birds mushroom. In the picture below, taken in the early 1960s, Dorothy (far left in plaid jacket) points out a bird to a group visiting the Lab.

DAVID G. ALLEN

Although she says she's never been enthusiastic about keeping lists, many local birders consider Dorothy the Cayuga Basin's most diligent record keeper. And, according to Ned Brinkley, she has encouraged others to follow suit. "Had Dorothy not been present when I first started birding in the Basin, I think I wouldn't have forced myself to document the birds I saw as carefully as I did." He adds that he had fallen out of the habit of documenting birds for committees such as the New York State Avian Records Committee (NYSARC), but "Dorothy insisted upon it, and I'm glad now that she did."

Dorothy admits she was indeed a stickler when it came to bird reports. "Having been brought up by Doc Allen on the importance of keeping good records, I was real fussy. You don't just say, 'Oh, yes,' and write it down. If it's something unusual, you get all the details." Among the index cards she keeps of her own detailed sightings are some pretty exceptional local records: Lesser Black-backed Gull, Harlequin Duck, Tricolored Heron. "I was so excited whenever I found a new bird that I'd go to the nearest phone and call somebody else and say, 'Come on down and corroborate this sighting.'"

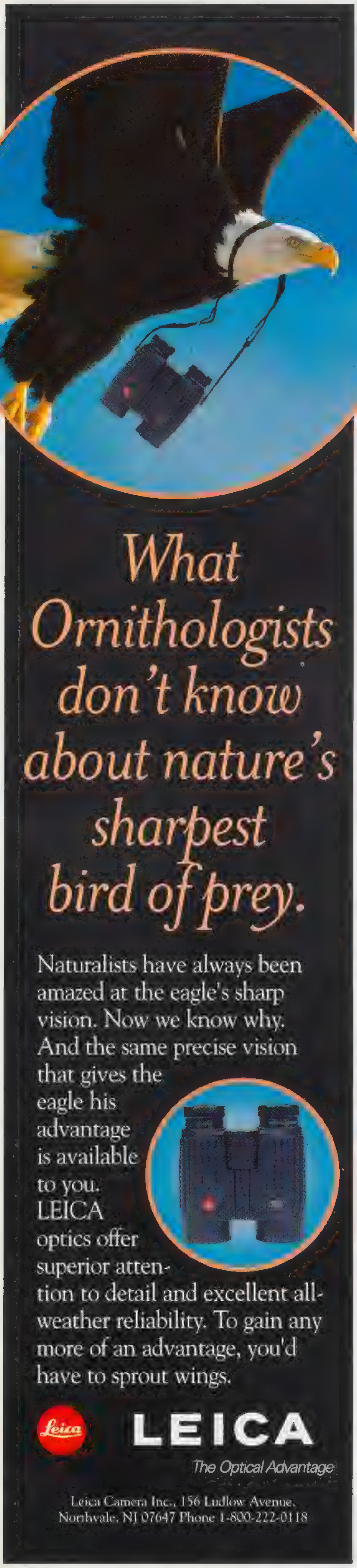
Dorothy is pleased whenever local birders find new birds, but she doesn't go to see them all herself anymore. "I let other people do the chasing now," she says. She still continues to bird when she can, though, with the Campus Bird Study Group. Made up primarily of the spouses of Cornell faculty and staff, the group has been going strong since the 1950s and played an important role in putting together the book, *Birding in the Cayuga Lake Basin.*

It's not surprising that Dorothy has passed her love of birds and birding on to her children and grandchildren. "My son kids me by saying, 'We had to take up birding, in self-defense!' And now his children are saying that about him," she says, laughing.

Ithaca birders have recently put together two Cayuga Lake Basin birding competitions, with the intent of encouraging people to go out birding and to share with each other interesting sightings and observations about bird behaviors. One of them, an Ithaca-only event, is the McIlroy Award, named in Dorothy's honor. "I was shocked," she says, when she learned of the tribute.

Dorothy McIlroy is well respected by birders and ornithologists in the Ithaca, New York, area. "I learn something from Dorothy every time I talk with her," says Greg Budney. "She thinks about things in great detail, and she's fair and honest and appreciates those qualities in others. She's been an inspiration for many years." Ned Brinkley shares that sentiment. "I was fortunate to be able to spend time in the field with someone so full of knowledge and grace, and so willing to share that knowledge patiently," he says. Indeed, Dorothy McIlroy is revered by many for her contributions to birding—contributions recognized and appreciated by those who continue to seek and learn more about the birds of the Cayuga Lake Basin and who are fascinated by the ornithological history Ithaca holds. ■

Allison Childs Wells is an avid birder who lives in Ithaca, New York. She writes for many local and national publications and is a former lecturer in writing at Cornell University.



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and winter birding, this is how it happens: four or five of us are pushing through the pale-yellow grass in an opening in the woods, trying to flush up a Le Conte's Sparrow or a Sedge Wren. It's a frosty day in January, still early, and we have yet to find anything good. There's the usual chatter about the odds of turning up something rare or wishing we had a thermos of hot chocolate. We've just about reached the end of the field and everybody's thinking about where to go next when a sharpie shoots by like a feathered cruise missile. Intent on some luckless quarry, oblivious to its immobile observers, it passes by so close we can practically see the resolve in its fierce brow. A Blue Jay lets out a strangled squawk as it dives for the dirt, and then the woods are as silent as a church.

No one says anything for a long moment. I let out a heartfelt "Wow," and my frosty breath is still hanging in the air when the little hawk is just a blurry streak in my memory. ■

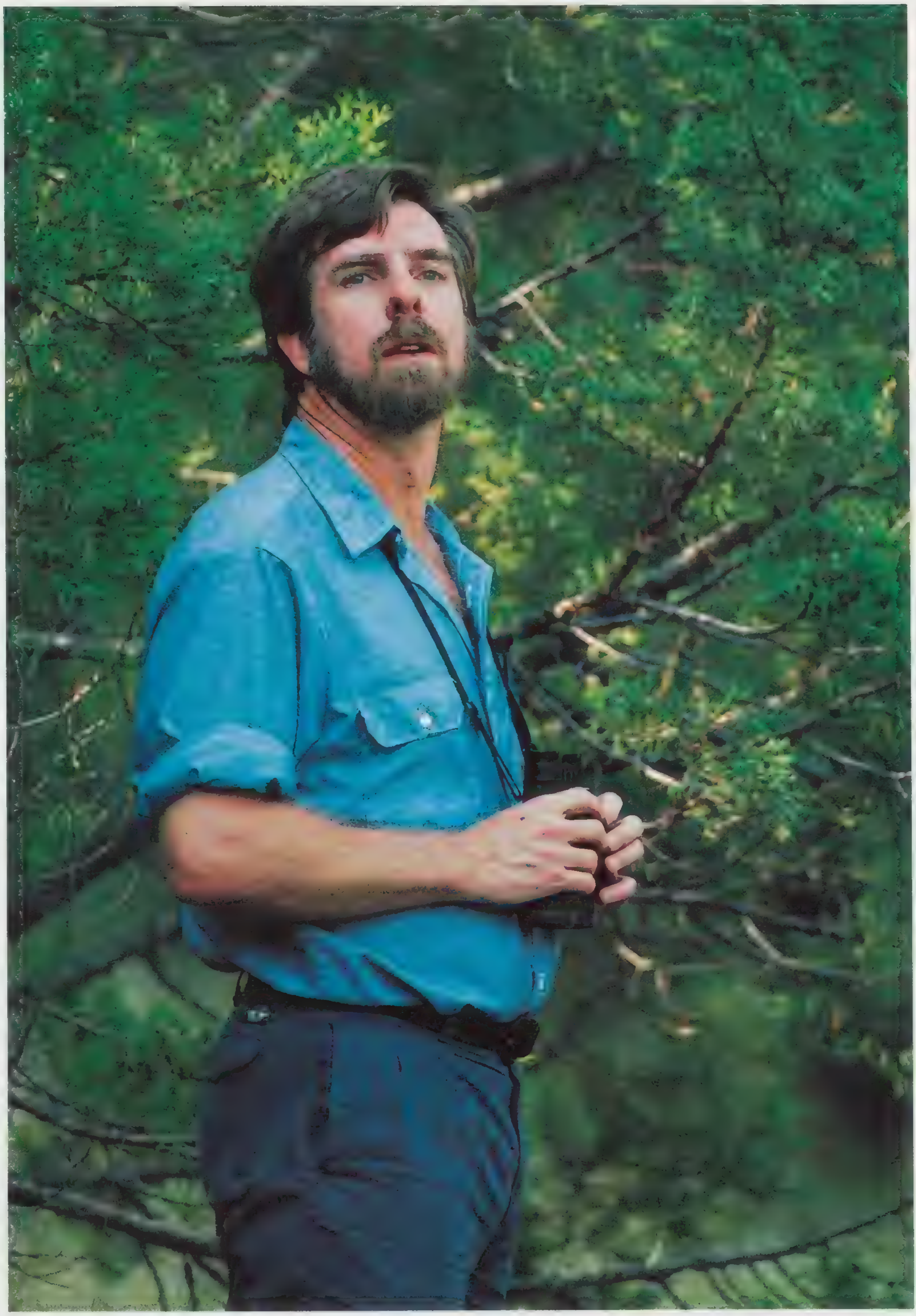
have made on her birding cruises have helped to fill in some significant gaps in our knowledge of pelagic birds.

A passion for birds has led many individuals to lifelong vocations while they were pursuing what many consider a mere diversion, a mild-mannered hobby. Kenn Kaufman, one of the most admired educators in the realm of birding, didn't even graduate from high school, and yet his book, *A Field Guide to Advanced Birding,* has taught thousands of birders the finer points of field identification. "I'm not your typical high school dropout," says Kaufman. "And I don't encourage young birders to follow my example. They should definitely get some kind of a college degree."

But at age 16, a college degree was the farthest thing from his mind. The young honor student from Kansas craved having the chance to see new birds, so he took off hitchhiking across Canada and the United States. Three years later, he established a reputation for himself by setting a record for the most North American bird species sighted in one year. "Then I burned out on listing and got more interested in what the birds really look like," he says. Just as Kaufman was developing new methods for field identification, birding tours started becoming popular as vacations. "I started leading tours, and I discovered that I had an aptitude for it, as well as for writing and public speaking."

By then an ace in the birding field, Kaufman started a magazine called *Continental Birdlife,* which provided another lesson for his self-education. "It lasted only a couple of years," Kaufman explains, "but I learned everything about the publishing world from the ground up." His experience on the magazine led to a staff position at *American Birds* magazine and later to a contract with Houghton Mifflin for his first book. He has recently written a new book, just released this winter, titled *Lives of North American Birds.* The 700-page book, illustrated with photographs, gives a capsule life history of every North American bird. "I'm up to my ears in work now," says Kaufman, who is currently completing pen-and-ink drawings for yet another book, *The Kingbird Highway.* This book, about his early birding experiences, is due to be released this spring.

Phyllis Isler—another birder whose passion for birds led to a vocation—got a late start in ornithology. "First I raised four children, then I graduated from college as a biophysics researcher," says Isler. Later, as a widow, she was vacationing in the back country of Ecuador when she met her future husband, Mort Isler, an avid birder. His interest in birds set a spark to her own, and she has since co-authored a number of major works on Neotropical birds, including the book, *The Tanagers.* Isler is now


HUGH P. SMITH, JR.

Roger Tory Peterson (far left) and Kenn Kaufman (above) both chose to go off the beaten paths to fulfill their destinies as famed bird educators. Peterson's formal education didn't include ornithology; Kaufman didn't even graduate from high school.

Ted Parker, who died in a tragic plane crash in 1993, is considered by many to have been the greatest field biologist of the 20th century—and yet he never completed an advanced degree. The recently discovered bird species shown below was named Herpsilochmus parkeri *in Parker's honor.*

a research associate with the Lab's Library of Natural Sounds. Her current work, done in collaboration with her husband and several other researchers, focuses on antbirds.

"We're working on taxonomy," she says. "What we originally thought to be one species of antbird has turned out to be six or eight species, and we are documenting the new materials." The couple had nearly completed a book on antbirds when it became evident that the new information would first have to be presented to the scientific community in the form of multiple papers. "The book will have to come along after that process," says Isler.

Another Lab associate who is following an untraditional path to a career in ornithology is Bill Evans. "I always loved birds, but I went to college with the vague idea of becoming a doctor or something." But several years ago, while he was an undergraduate, Evans started to arrange his life so that he could take the month of May off and watch migrating birds. It soon became evident that doctoring was not for him. "I gave up my apartment, camped out at a local state park, and started delivering pizzas so that I could indulge my fascination with migration," he says.

"One night, I returned to my campsite about midnight after delivering pizzas, and I was sitting in a lawn chair, listening to the sounds of migration," says Evans. "I realized that each bird had a nocturnal call; I could hear them as the birds passed overhead. It suddenly came to me that if I could tape record the calls and identify them, I could record migration in action."

Every spring since that 1985 "vision," Evans has been recording migrating birds as they pass overhead at night and trying to make sense of what he is hearing. From the start he

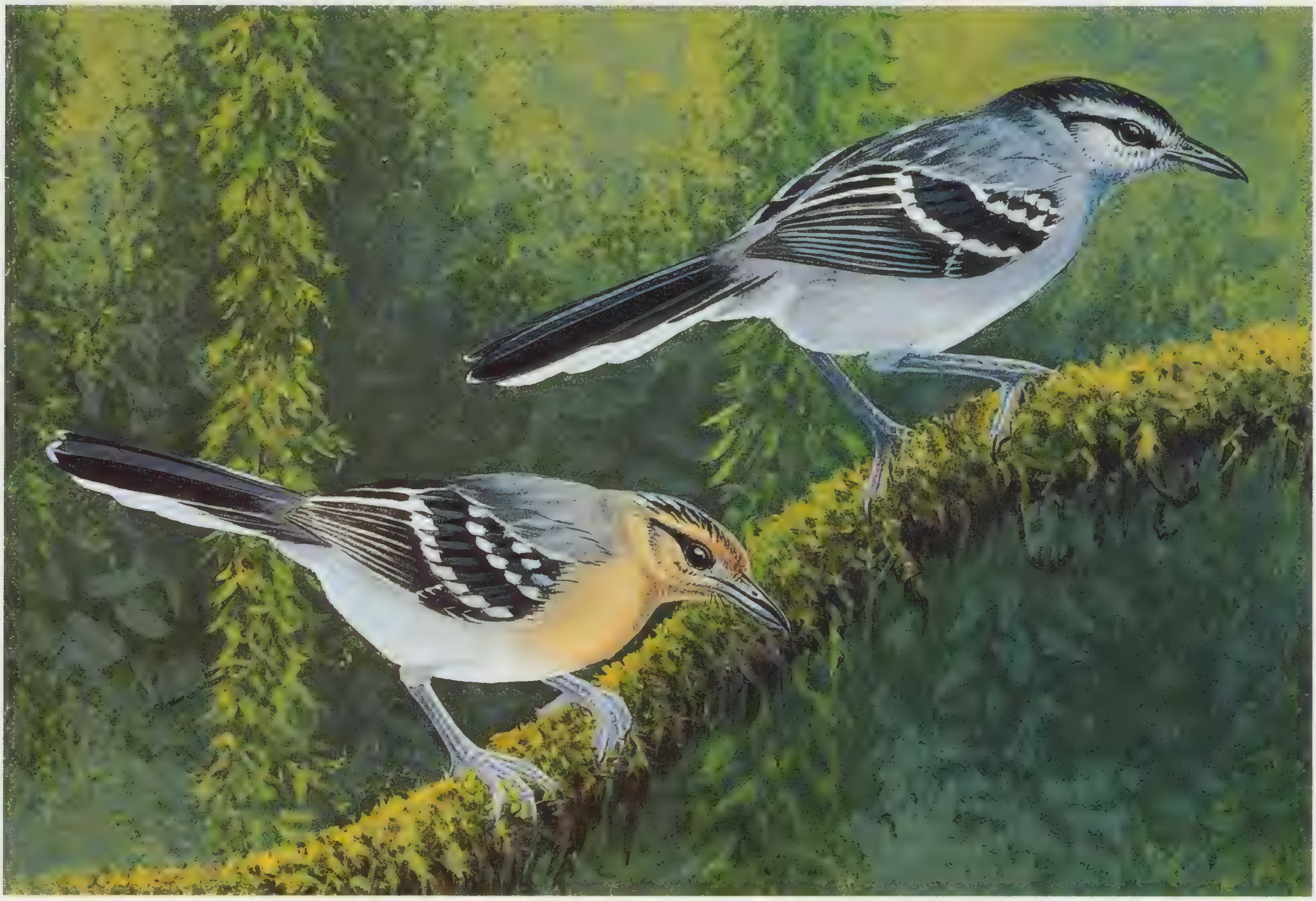


ILLUSTRATION AND PHOTOGRAPH BY JOHN P. O'NEILL was thoroughly convinced that his work would eventually enable scientists to study migration and monitor bird populations more effectively. At first, Evans worked completely independently, striving to verify the value of his idea. He had to overcome many obstacles. He had no previous sound-recording experience and no equipment when he began. And the birds' nocturnal flight calls were difficult to identify and authenticate. It took several years of hard work before he felt his ideas were ready to be presented to the scientific community. "I first had to convince myself of the utility of this kind of monitoring," he says. "I found an unrelated job that would give me the month of May off, and I pursued recording essentially as a full-time hobby."

After nearly a decade of independent research, Evans became a Lab associate, working with the Bioacoustics Research Program to develop a computer software program that will automatically count calling birds during migration. "Things are finally blossoming," he says. "I recently had my first scientific paper published, and I have two more under review. This has all happened in slow steps because I haven't gone through the traditional system. I'm a college dropout." Like other people who have pursued ornithological knowledge on the less-trodden path, Evans sees both advantages and a few disadvantages. "I can't get university grants," he says, "but I do have a certain freedom—a certain playful way of approaching my work and a different perspective. Whatever I've accomplished has come about because I have a real quest for knowledge."

"If you have a thirst for knowledge and a passion for birds," says birding guide Bret Whitney, "you can work your way into a birding career." Whitney, another Lab associate and a recognized expert on the birds of the New World tropics and New Guinea, chose a career in ecotourism because it provided an unparalleled opportunity to travel. "It gave me access to geographic coverage that no other position can match," says Whitney. "Being a birding tour guide allows an individual to gain a broad base of knowledge."

He has used his special flair for identifying bird sounds to discover species in South America and Madagascar that were unknown to science. He has published many scientific papers about his discoveries and says that amateurs who want to make a meaningful contribution to ornithology should strive to have their research published. "Amateurs making basic observations should document their work, taking careful notes and writing things up for publication," says Whitney. "Be familiar with the ornithological literature, improve your writing skills, and work your way up, starting with write-ups in your local bird club newsletter and contributing to notes in birding magazines."

HERBERT CLARKE

If you have a thirst for knowledge and a passion for birds, you can work your way into a birding career

Several years ago, Debra Shearwater (above) gave up her career as a dental hygienist to lead pelagic birding tours off the central California coast. She and her tour participants have helped to fill in noteworthy gaps in our knowledge of pelagic birds.

The people interviewed for this article suggested a number of other creative career pathways available to talented birders—outlets that could lead to significant contributions to ornithology. They include producing art and photographs for illustration and documentation purposes; teaching bird identification and conservation workshops; leading birding tours; writing books, articles, and scientific papers; participating in field research as volunteers or paid assistants; and recording bird sounds. Though these pursuits can lead to fulfilling careers, it may take many years of scraping along with a day job or moonlighting at pizza parlors before these activities will bring you financial security. But most birders with this kind of intense passion will choose love (of birds) over money any day. ■

Kristi G. Streiffert is a freelance writer based in Coulee Dam, Washington. She frequently writes for Living Bird.

The Best Laid Plans

What happens when conservation efforts work too well?

by Robert F. Rockwell, Kenneth F. Abraham, and Robert L. Jefferies

Each spring and fall vast, undulating skeins of Snow Geese pass overhead, noisily making their way north to arctic and subarctic breeding grounds or south to wintering areas. Who could fail to be awed at seeing thousands of these striking birds speeding powerfully overhead or rising in a massive swarm from a freshly harvested field? For many of us, their migrations herald the arrival of spring and fall each year. It's not surprising that so many biologists, wildlife managers, hunters, naturalists, and other concerned citizens have committed so much time and effort to preserving these birds. Snow Geese are part of our natural heritage and their absence would be unthinkable.

Thanks to the adaptability of these birds and to conservation efforts in the United States and Canada, the Snow Goose population in the central portion of North America has grown nearly 300 percent since the 1960s. Researchers estimate that this population—which breeds primarily along the shores of Hudson Bay and Foxe Basin and winters from Iowa and Nebraska south to the Gulf Coast—now numbers more than three million birds in midwinter. At a time when many species of birds are declining and others are becoming extinct, you'd think that the Snow Goose's burgeoning population would be cause for celebration. Instead, scientists are concerned that the increasing numbers of geese may soon lead to an ecological catastrophe as these voracious feeders turn the delicate arctic habitat they inhabit into a barren wasteland.

How did this dire situation come about? And what can be done to alleviate the problem? To understand this dilemma, it is important to trace this species' long-term history and see what a profound impact human actions have had on its numbers. Most Snow Geese in central North America originally wintered in brackish marshes along the Gulf Coast in Texas and Louisiana. Destructive feeders, they grubbed out and consumed tubers and roots of marsh vegetation with their large, serrated beaks. But the food resources in these natural marshes were finite and acted as a control on the goose population. As the numbers of geese exceeded the available food supply, the birds' mortality rate would increase, reducing their population to a level that their traditional wintering areas could support.

In the two decades following World War II, many coastal marshes were lost or severely degraded through increased commercial development. At the same time, however, farmers increased the production of rice crops on private lands adjacent to the birds' traditional coastal wintering grounds. These agricultural areas provided at least a million acres of wintering habitat with abundant food, not only in the post-harvest rice stubble, but in adjacent soybean fields and pastures. The winter populations of the geese began to increase and the birds extended their range northward, feeding on rice fields up to 150 miles inland from the coast.

Converting inland grasslands to agricultural croplands was an absolute boon for the geese. The crops provided the ever-increasing numbers of geese with a large food subsidy, so that the depletion of the winter food supply in their traditional winter habitats no longer acted as a population control on the birds. Their winter mortality decreased significantly, their body condition in spring improved, and their reproduction rate increased markedly.

LAURAINE ARMSTRONG (2)

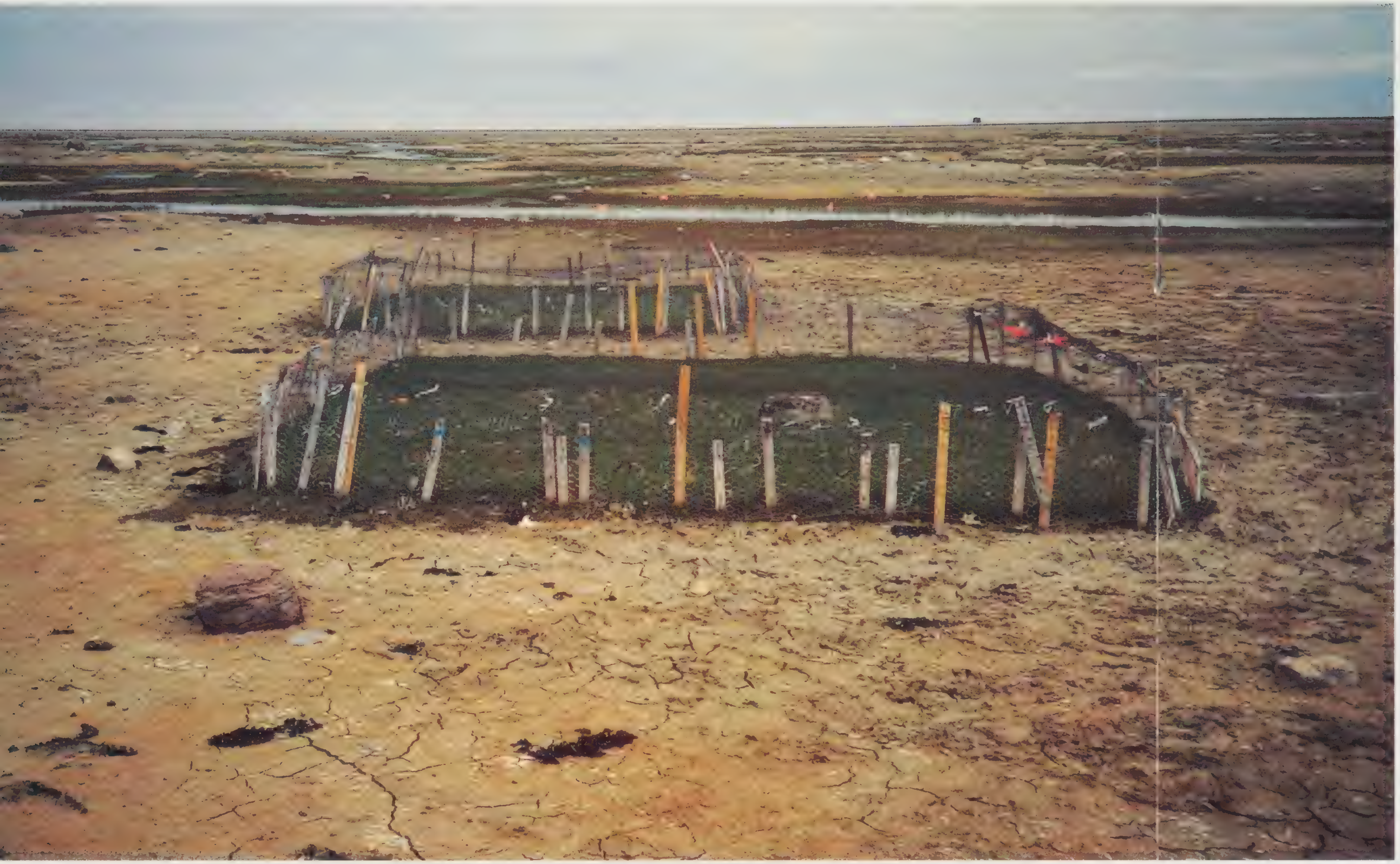
Voracious feeders, Snow Geese grub out plants by the roots, causing serious damage to delicate arctic plant communities, at left. Above, a Snow Goose broods its eggs. One way to help ease the goose dilemma would be to allow native peoples to harvest more goose eggs.

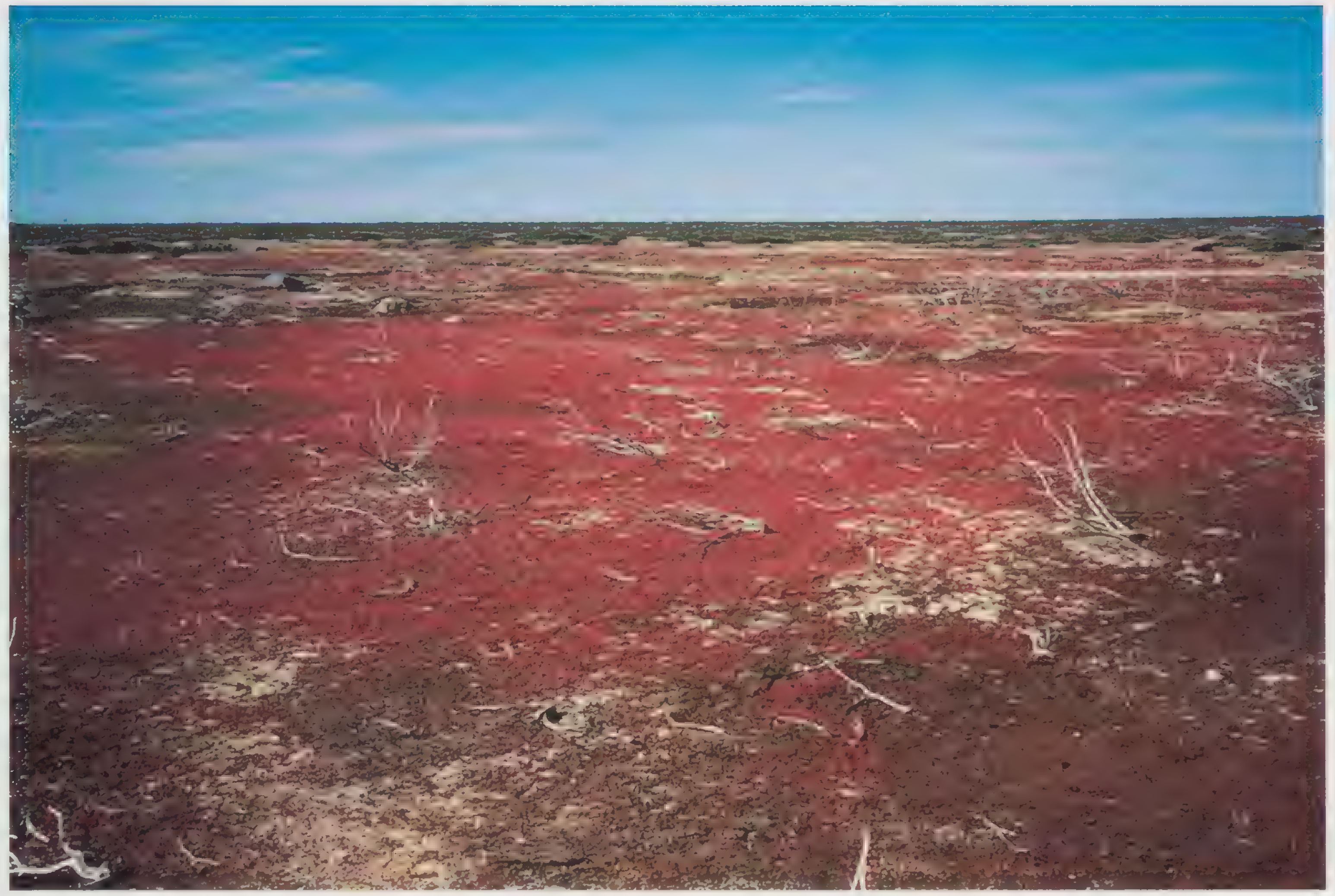
SNOW GEESE ON PAGES 16 & 17 BY ART WOLFE

Federal and state agencies further expanded the winter range and migration staging areas of the Snow Geese by developing national and state wildlife refuges on the northern prairies. These refuges were intended to restore wetland habitat for breeding and migrating waterfowl. Wildlife managers at the refuges manipulated crops to provide food for the birds—a practice that augmented the large food subsidy the geese were already reaping from private lands where agricultural activity had also increased.

Although hunting pressure was initially intense in areas adjacent to the refuges, political lobbying in the 1970s brought changes, including the establishment of no-hunting zones and restricted goose harvests. The combined effects of less hunting pressure and increased food subsidies contributed to a nearly 50 percent reduction in adult mortality (from 22 percent to 12 percent). This reduction was also influenced by a decline in both the number of hunters and the number of days they hunted.

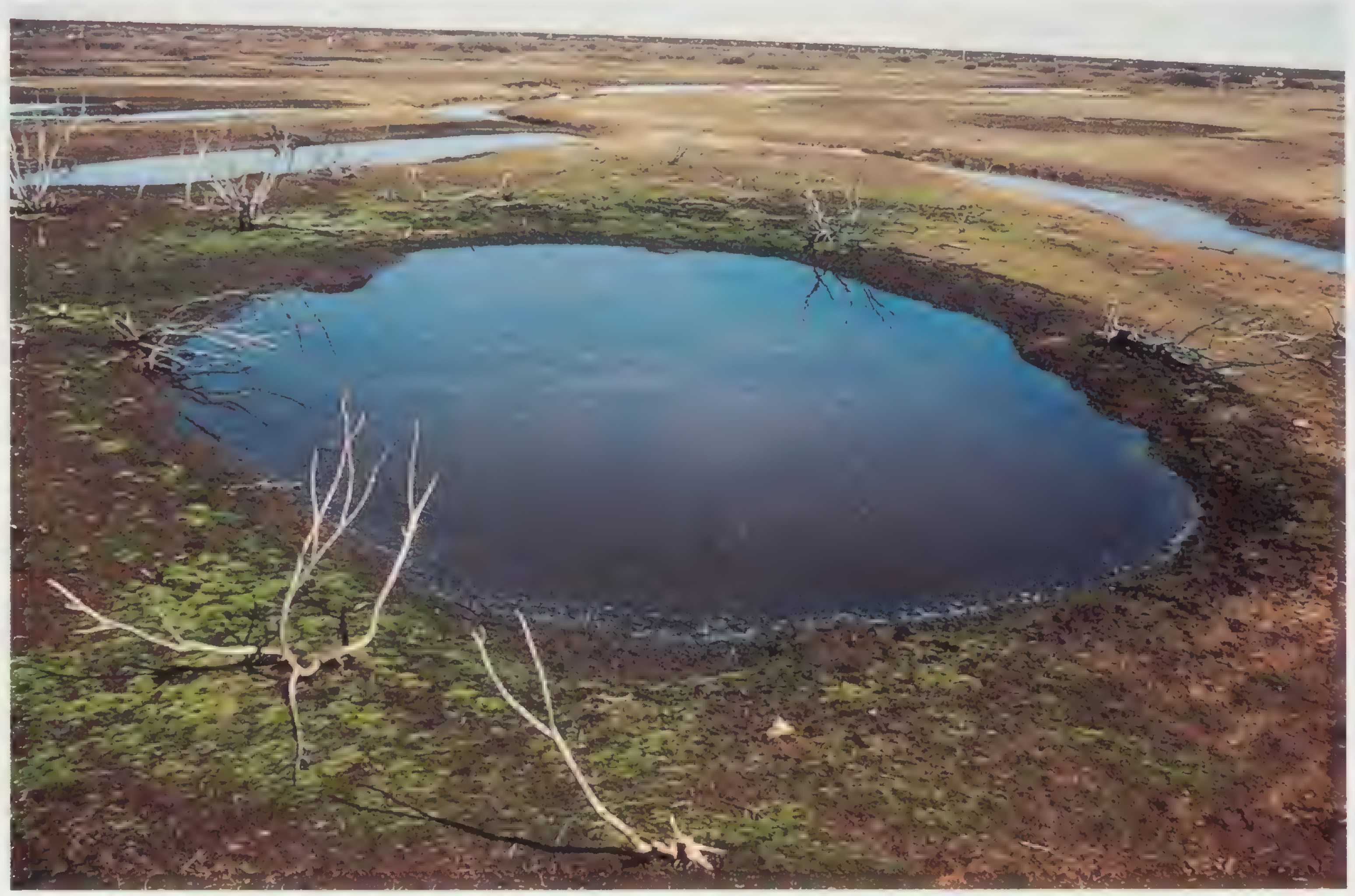
The size of the winter Snow Goose population increased dramatically as it readjusted to the extensive increase in the quantity and quality of the foraging habitat, both on their wintering grounds and along their migratory flyways. The growth of the goose population in central North America was stimulated further during





ROBERT F. ROCKWELL (3)

A single species in a simple food chain consuming the food sources in a habitat too rapidly leads ultimately to the deterioration of the entire ecosystem



the late 1960s and 1970s by a temporary warming trend in the Hudson Bay and Foxe Basin nesting region, which resulted in an earlier spring melt, earlier nesting, and increased reproductive success.

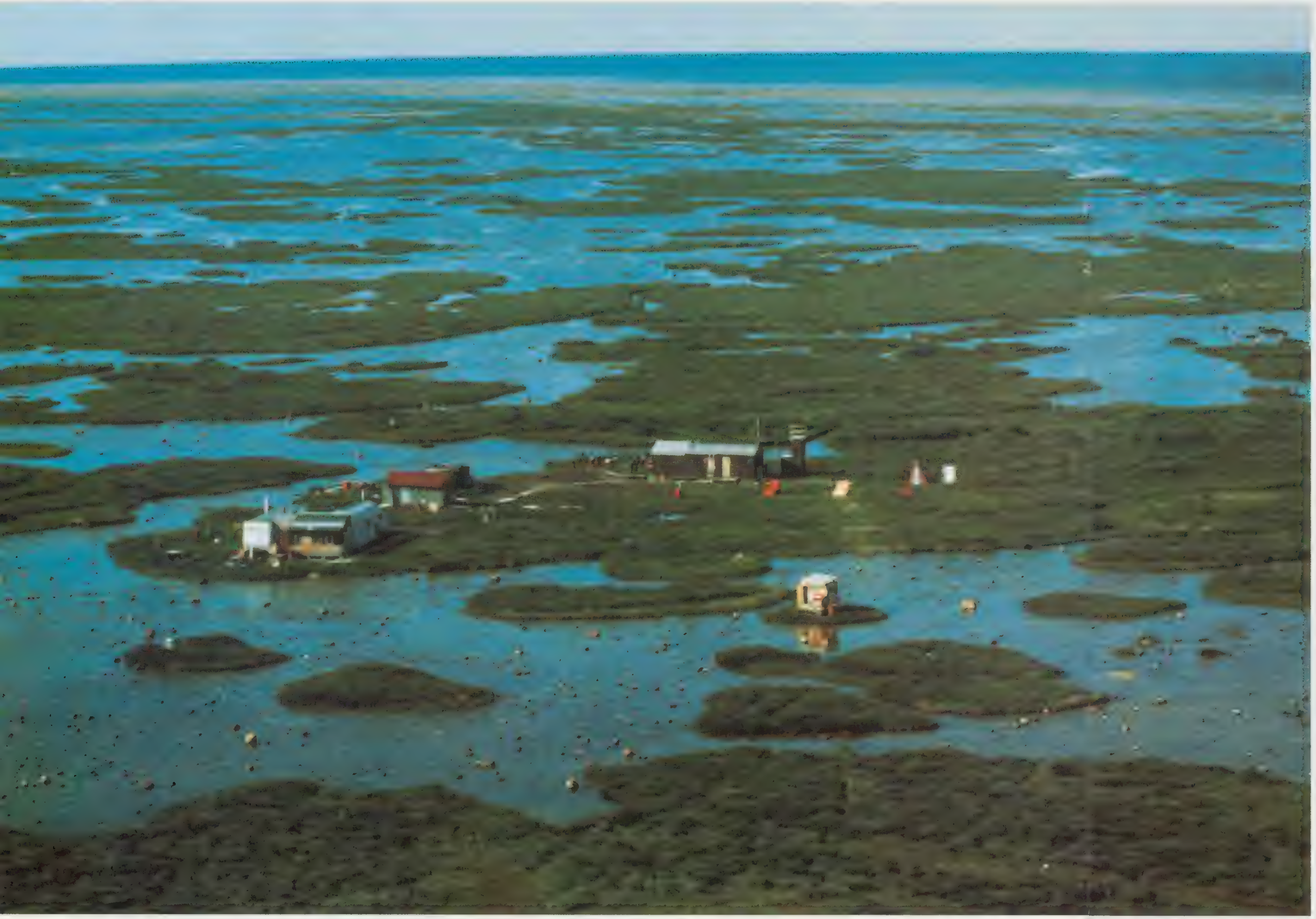
Much of our information on the growing Snow Goose population in central North America and the birds' effect on their coastal tundra breeding habitat comes from a long-term study of the goose colony at La Pérouse Bay near Churchill, Manitoba, in Canada. When studies began there in 1968, approximately 2,000 pairs of Snow Geese were nesting in the willow and lyme grass fringes of the coastal salt marsh. By 1990, the colony had grown to 22,500 pairs—an average annual increase of nearly 8 percent. Although much of this account is drawn from that study, research at several other nesting sites indicates that the results are applicable on a broad scale.

Like most arctic-breeding geese, Snow Geese accumulate the nutrient reserves they will need to produce and incubate their eggs during their spring flight north. They also feed at the breeding colony while they search for a nest site and begin laying eggs. Because the geese arrive before the vegetation has begun growing, they initially feed by grubbing below the surface to get the nutrients stored in the roots and rhizomes of plants. By mid-June, grasses and sedges are growing, and the adult geese and their broods of goslings graze on the above-ground portion of their salt-marsh forage plants.

As the population at La Pérouse Bay grew, the overall demand for food throughout the season increased. But grubbing had the most serious impact on the ecosystem. When adults grub for roots and rhizomes early in the season, they destabilize the thin arctic soil so that melting snow and spring rains can cause erosion. In some instances, ponds form and are then enlarged each year as the birds grub along

At the La Pérouse Bay study area, researchers erected goose-proof barriers in selected areas to document the effects of geese on the habitat—inside the barrier, lush vegetation; outside, a barren wasteland. Grubbing by geese sometimes causes salts to move to the soil surface, killing many plants: above right, a dead willow forest. At right, a pond formed by erosion caused by grubbing geese.

LAURAINE ARMSTRONG



The decline in the foraging habitat at La Pérouse Bay (above) has led to decreases in the size and survival rate of juvenile geese, but it hasn't slowed their population growth. The birds keep spreading into other less-disturbed areas. At right, a Snow Goose with her young.

the edges. As the number and size of these ponds increase, the amount of available forage declines.

The damage caused by the birds' grubbing at La Pérouse Bay was made worse by a series of late spring seasons in the high arctic. Geese from more northern colonies delayed the last portion of their migration and continued to feed at southern colonies. In 1984, for example, more than 100,000 staging geese destroyed much of the vegetation on one of the main brood-rearing areas on the east side of La Pérouse Bay in less than three days.

Beyond simply removing plants, foraging by Snow Geese—especially grubbing—leads to other changes in the coastal ecosystem. When the vegetation is removed, evaporation from the soil surface increases and inorganic salts from underlying sediments move to the surface, raising soil salinity. As salinity increases, the growth and survival rates of forage plants in the coastal marsh decline. Willows and other vegetation immediately adjacent to the marsh begin dying as the process intensifies. Ponds and bare soil dry out and the surfaces crack. Ultimately, all that remains is a barren forest of dead willows and a few nearly inedible plants that are capable of surviving in soil with a salinity level that sometimes reaches three times that of sea water.

Thus, the chain of events that began with a single species in a simple food chain consuming the food sources in a habitat too rapidly leads ultimately to the deterioration of the entire ecosystem. The unfortunate consequence of this phenomenon (called a trophic cascade) is that staging, foraging, and nesting habitat are lost—not just to Snow Geese, but to all the other species sharing the marsh and adjacent areas. These include other species of waterfowl, shorebirds, marsh birds, upland birds, and numerous passerines.

For Snow Geese, the decline in the quantity and quality of foraging habitat at La Pérouse Bay has led to decreases in the size and survival rate of juvenile geese and a reduction in the reproductive success of the adults that continue to use the traditional nesting and foraging areas. You might suppose that this would slow the growth of the goose population and ultimately place a cap on its size, much as the limited winter food resources in the Gulf Coast marshes once did. Unfortunately, this has not been the case. As conditions worsen, increasing numbers of adults are moving to adjacent areas to nest and raise their goslings in coastal marshes that are not yet as degraded as their traditional breeding sites. The success of these dispersers is sufficiently high that the more widely distributed population continues to grow. And with it, the process of population growth, habitat degradation, and dispersal continues to spread across an ever-expanding geographic area.

In addition to La Pérouse Bay, there are at least three other sites on Hudson and James Bays where habitat deterioration and trophic cascades have also begun. This process will continue until adequate forage no longer exists for the members of the dispersing goose families. By that time, miles of coastline and the habitat of numerous other species of birds will have become seriously degraded. And because of the high salinity, cold temperatures, and short growing seasons in these areas, it will take decades for these habitats to recover.

JUDY SMITH

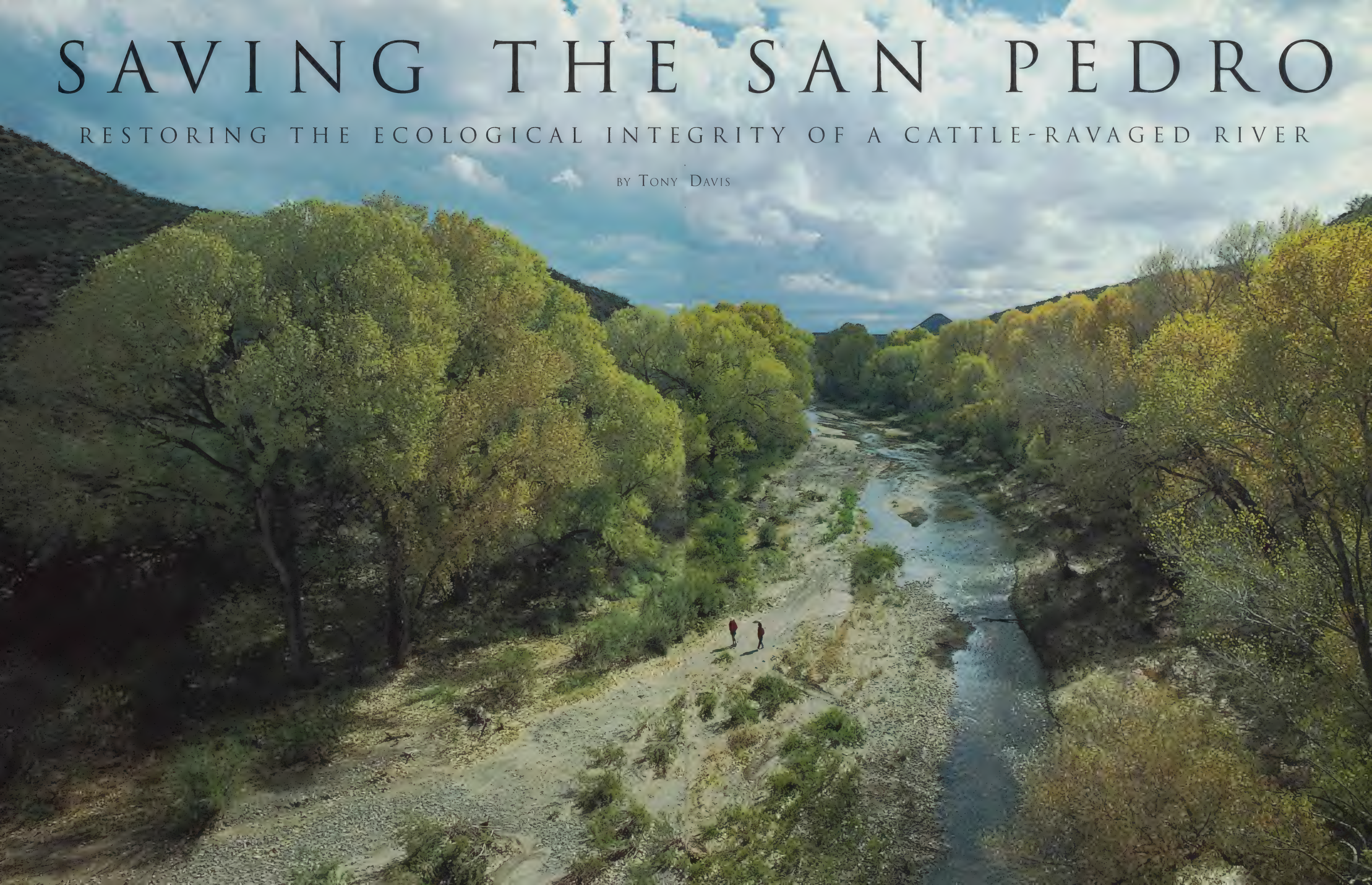
The most hopeful aspect of this saga is that the problem may have been identified in time to take action that can minimize further destruction of the sensitive arctic coastal ecosystems. The United States and Canada have established the Habitat Working Group, a joint study group composed of researchers and land managers set up to examine the ecological impact of Snow Geese and develop a plan to reduce the population of this species to a level that does not threaten the ecological integrity of its breeding habitat. Proposals on the table include increasing traditional egg collecting by native peoples, liberalizing hunting regulations for Snow Geese, and establishing special hunting seasons. The success of these actions—and even whether they can be implemented at all—depends on the willingness of a large and diverse community of scientists, wildlife managers, and naturalists to cooperate in the endeavor. One thing that we must all do is to try to alter our traditional focus on the conservation of single species, whether they are rare or abundant. The dilemma of the Snow Geese is not simply that there are too many gaggles of geese but that these birds are only one member of a diverse and fragile arctic ecosystem. That ecosystem and all its members require and deserve our attention. ■

The authors are all members of the Hudson Bay Project, a charitable corporation dedicated to studying coastal arctic tundra ecosystems. Robert F. Rockwell is an ornithologist at the American Museum of Natural History, Kenneth F. Abraham is a biologist at the Ontario Ministry of Natural Resources, and Robert L. Jefferies is a botanist at the University of Toronto.

SAVING THE SAN PEDRO

RESTORING THE ECOLOGICAL INTEGRITY OF A CATTLE-RAVAGED RIVER

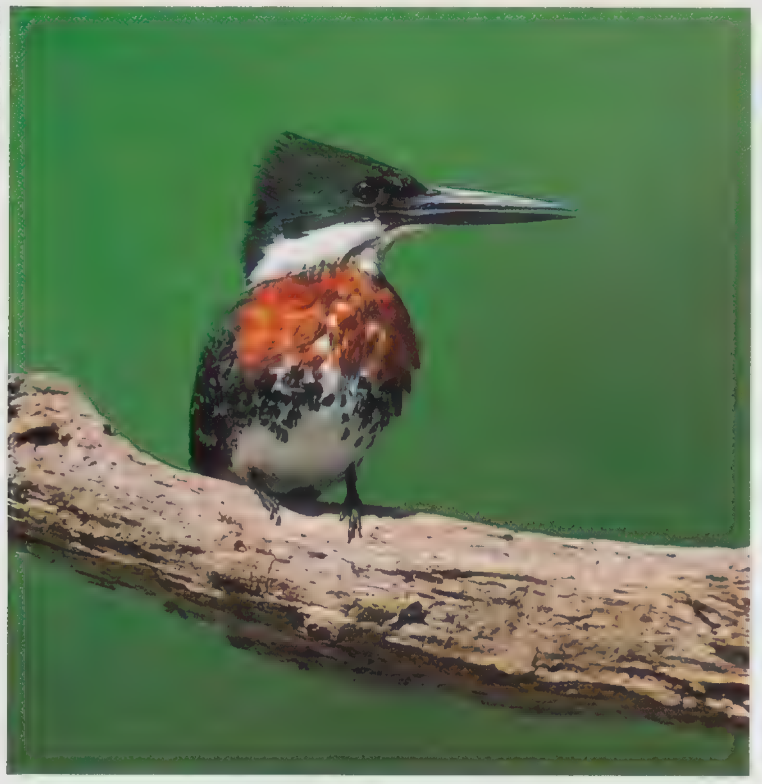
BY TONY DAVIS



The calendar said mid-July, but the southeastern Arizona air felt like mid-January: cool, clammy, and drizzly. It was just after 6 A.M. and biologist Jack Whetstone of the Bureau of Land Management (BLM) and I were trudging down a muddy stream bank of the San Pedro River, dodging puddles and listening for the *sweet sweet sweet* of the Yellow Warbler and the *clack* of the Yellow-breasted Chat. Usually hard to miss in the riparian groves of the San Pedro, these birds were hiding from the morning's rain in the tops of 100-foot-tall, 60-year-old cottonwood trees.

Then Whetstone pointed across the chocolate-colored creek, shallow enough to wade through and barely wider than a country road. The object of his attention was a Green Kingfisher, perched on a low-lying willow branch jutting over the water. Typically, this eight- to nine-inch bird, tinted the dark green of a ponderosa pine forest, blends in with its surroundings. But this one sat in the open for two minutes before jetting downstream.

Whetstone's job is to walk up and down the river counting these birds. A naturalist since his student days at the University of California in the 1960s, he's recording an unparalleled ecological success story—how, by removing cattle, an ecologically damaged river has been turned into one of the best bird habitats in the country. And the Green Kingfisher is a visible symbol of that success. Until just a few years ago, this species' only known nesting area in the United States was in South Texas. Four kingfisher pairs now breed along the San Pedro River, and up to 15 of the birds have been seen there in a single summer. They thrive on shaded rivers and brooks and quiet backwaters. The San Pedro is rich in that habitat, and



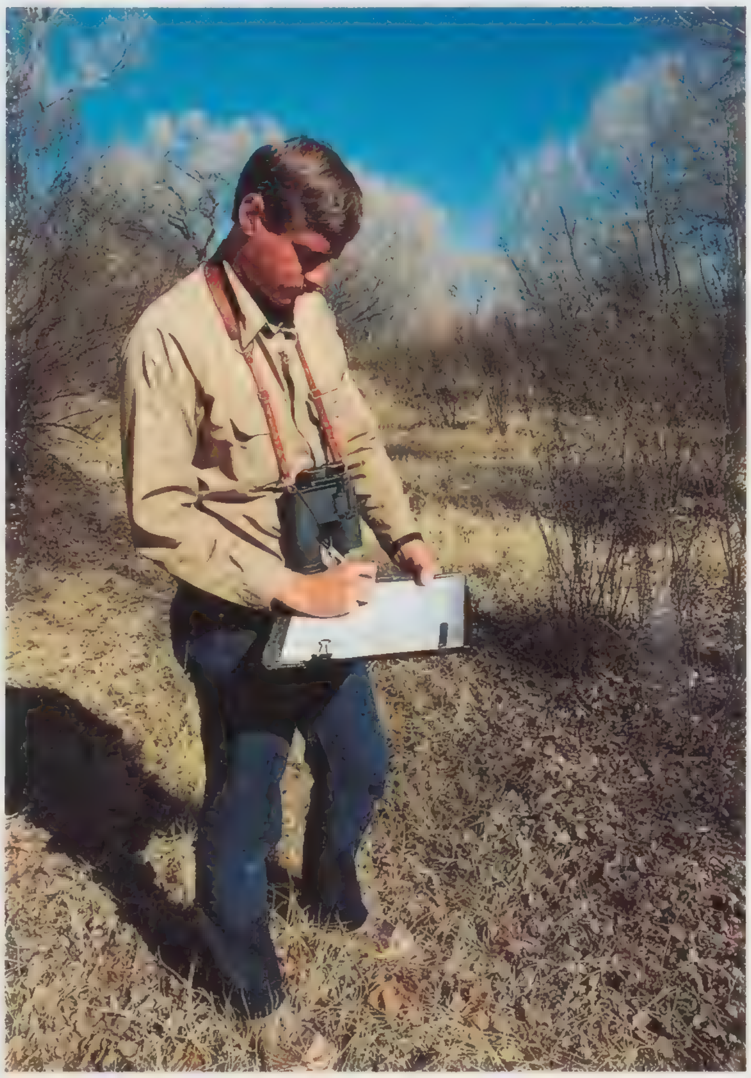
STEVE BENTSEN

PHOTO ON PAGES 26 & 27 AND BELOW BY MARTY CORDANO

Congress created the San Pedro National Riparian Conservation Area in 1988, for the first time setting aside a river to preserve habitat. In less than a decade, the lush riparian vegetation has rebounded, creating perfect habitat for Green Kingfishers (at left) and many other species of birds.

With nearly 400 bird species living along or near it, the San Pedro River has the highest bird diversity of any place of its size in the country it's the last river of its kind in the entire Southwest.

The San Pedro River looks like a bright green ribbon, lined with tall, century-old cottonwood trees, as it plunges north from Mexico's Sierra Madre, through yellow sacaton grassland fields and scrubby mesquite groves. For decades, thousands of cattle had been devouring the river's grasses and young tree seedlings, just as they do on most other western rivers. But in 1988 the BLM, which had traded other land for the privately owned riverfront, removed all cattle from a 36-mile stretch of river for a 15-year trial period. That same year, Congress created the San Pedro National Riparian Conservation Area and, for the first time in history, set aside a river to preserve habitat. With the cows gone, young trees and grasses sprouted and bird counts skyrocketed. The banks of the San Pedro River are now jammed with thick groves of young cottonwood and willow trees and lush stands of cattails, bulrushes, and other marsh grasses.



Biologist Dave Krueper (right) of the BLM documented the early years of the San Pedro's recovery. His was the first research to chart the increase of bird populations along a waterway after cattle had been removed. When Krueper came to the river in 1986, the San Pedro's riparian habitat had been devastated by decades of grazing cattle. At that time, huge, cracking dirt cliffs towered over the water (far right), where cattle had devoured the bankside vegetation and caused erosion.

Every other low-lying Southwest desert river—from the Colorado River at the Arizona-California border on the west to the Rio Grande in New Mexico on the east—used to resemble the San Pedro. Since the turn of the century, however, these rivers have been dammed, diverted, grazed, mined, logged, or pumped into disrepair or outright oblivion. But unlike its counterparts, the San Pedro not only has no cows, it has no dams to hold back its flow. When the BLM took over, it kicked out all off-road vehicles and retired sand and gravel mining from the river. Now, with nearly 400 bird species living along or near it, the San Pedro River has the highest bird diversity of any place of its size in the country, and it also has the greatest diversity of mammals.

Last summer the American Bird Conservancy—a partner of Birdlife International, the world's largest bird conservation group—named the San Pedro River as its first Important Bird Area in North America. The designation kicked off a three-year Conservancy project to identify and try to preserve all nationally and internationally important areas for birds in the continent. But the river now faces a new threat. While 30,000 bird watchers spend nearly $3 million a year to travel there and gaze at kingfishers and other riparian specialties, new houses are marching toward the river at a furious pace as neighboring Sierra Vista—a boomtown with a current population of 35,000—continues its unbridled growth.

As long ago as 1981, an official with the Environmental Protection Agency warned that the growth of the town and the subsequent overconsumption of groundwater, exceeding the rate of natural water replenishment, could someday dry up the river. Other researchers have echoed these warnings, but preservation efforts have bogged down in interagency disputes and a climate of denial among local, state, and federal officials. It's not clear how long the river can coexist with growth.

"This site isn't just important for the United States or for Arizona. It's a globally important site," said Jeff Price, director of the American Bird Conservancy's Important Bird Areas program. "Losing the San Pedro would be like losing the Arctic National Wildlife Refuge or the Everglades."

The person who first documented the San Pedro River's recovery is BLM biologist Dave Krueper. His research—which was the first to chart the recovery of bird populations along a waterway after cattle were removed—has drawn national attention in recent years. When he first came to the San Pedro in 1986, the riverbanks were "beaten," he recalls. They were still lined with tall stands of aging cottonwoods but also contained exotic plants such as rabbit brush and Russian thistle. Huge, cracking dirt cliffs towered 10 to 15 feet over the water. Pointing at an overgrown forest of grasses and shrubs leading to a line of tall willows, Krueper said, "Back then, you could walk from here down to the willows, and you could see only a few shrubs and a few patches of grass."

The barrenness he saw made the coming turn of events all the more amazing. Before handing bird-counting chores over to Whetstone in 1992, Krueper recorded that the Bell's Vireo, Yellow Warbler, Common Yellowthroat, Yellow-breasted Chat, and Summer Tanager had jumped 2 to 20 times above his 1986 counts. The Song Sparrow, which had been virtually absent on the river in 1986, numbered 61 pairs per 100 acres by 1991. Gray Hawks had increased from 11 to 22 pairs. And now approximately 200 pairs of Yellow-billed Cuckoos—one-fourth of all the Yellow-billed Cuckoos in the West—live along the conservation area.

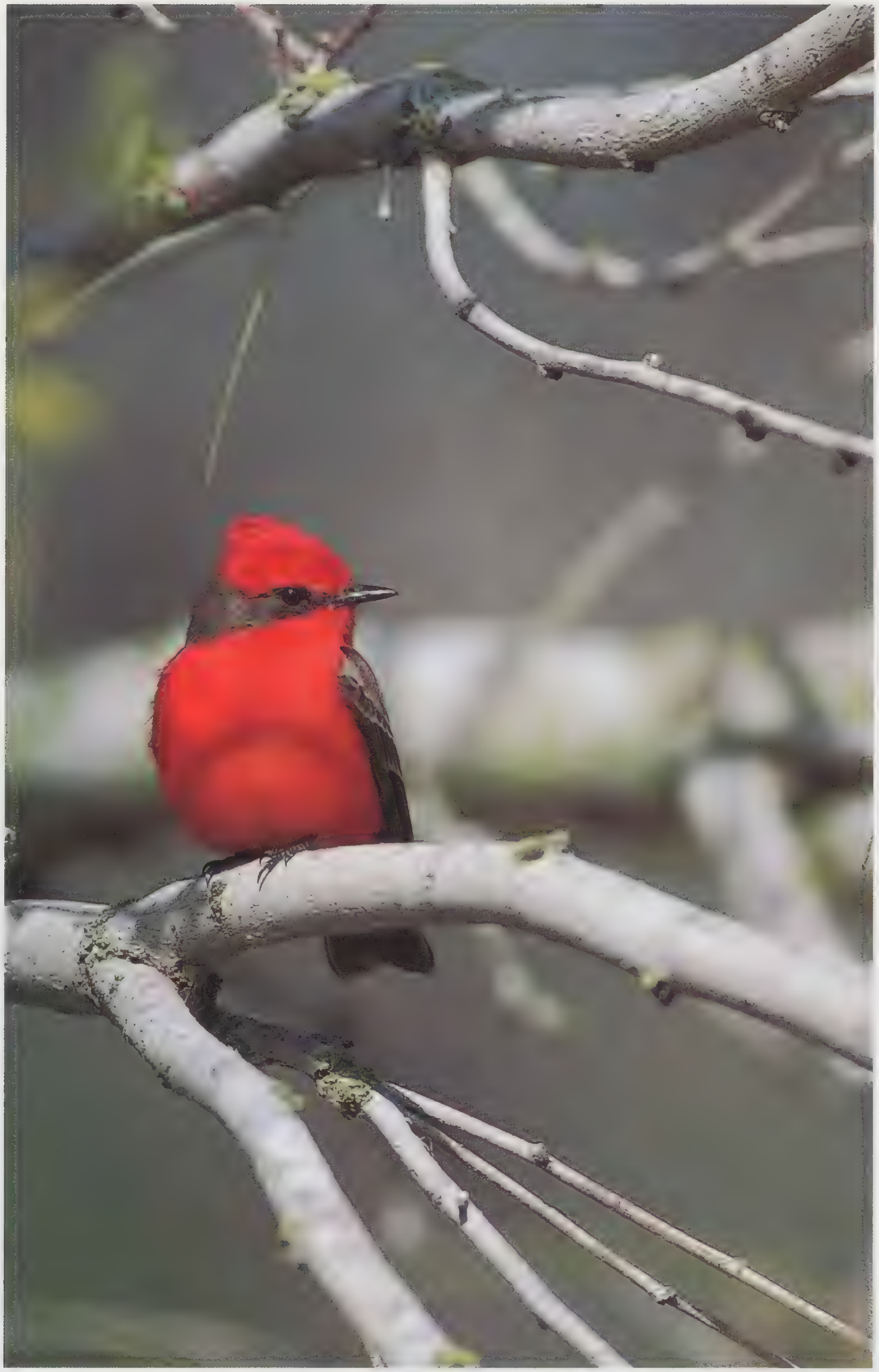
It's not hard to see why this river now draws so many birds. It lies at the epicenter of an ecological crossroads. The San Pedro and its environs lie at the southern tip of the Rocky Mountains, the northern end of the Sierra Madre, the eastern end of the Sonoran Desert, and the western edge of the Chihuahuan Desert.

As we sat inside his white pickup truck along the river on another drizzly July day, Krueper hammered home the biological significance of that mix of habitats. The river, he said, currently plays host to 200 species of Neotropical migrants, songbirds whose numbers are slowly declining in the Western Hemisphere because of assaults on their habitat. About 85 percent of all species of Neotropical birds in this hemisphere have been recorded along the San Pedro River. In raw numbers, nearly one million neotropical migrants pass through the San Pedro yearly, according to the American Bird Conservancy.

Losing the San Pedro would be like losing the Arctic National Wildlife Refuge or the Everglades

Just outside the pickup truck, some volunteers were starting to conduct a different kind of research in hopes of putting the San Pedro on the MAPS. That's short for the Monitoring Aviation Productivity Survivorship network—a private, nonprofit effort that runs 85 banding sites nationwide. These volunteers have been banding Summer Tanagers, Song Sparrows, and Yellow-breasted Chats here to increase their understanding of the San Pedro River. By banding and recapturing birds, the group can determine how many young are produced, how fat they become, and how many return as they mature. Krueper said he hopes this research will determine whether the river is a source—producing enough additional nestlings each year to

MARTY CORDANO (2)



LON E. LAUBER

repopulate other areas if the habitat were to improve—or a sink, an area in which the bird populations can't sustain themselves and must draw birds from other areas to maintain their numbers.

A few days later, I had a chance to see the diversity of the area's birdlife firsthand. During a fierce rainstorm, Whetstone and I heard endless whistles of chats, Common Yellowthroats, Yellow Warblers, and the *te de de little little eat* of Song Sparrows. A Green Heron dashed out of the trees ahead. And finally, we heard the *pip* of the river's signature bird, the flaming crimson Vermilion Flycatcher—a species that tantalizes birders, sometimes every 50 feet or so along the river, often letting them walk to within a few feet before dashing away. "They've been waiting for this rain," Whetstone said with a grin. "We haven't had any in a long time."

Later, Whetstone walked past a series of slow-moving, nearly stagnant pools, which give the river a tropical look. The ponds formed after the trees and grasses came back and slowed the river's flow. This extra plant growth has helped protect the riparian habitat from flood damage. In 1993, when a 100-year flood ripped out the banks, soil, and trees from many of the Southwest's ecologically ravaged rivers, the overgrown vegetation along the San Pedro slowed the floodwater enough so that it not only held down the existing river banks but also dumped another four or five feet of sediment, thus increasing the river's biological productivity.

"When the flood flows, it looks like chocolate soup running from bank to bank," Whetstone said. "The river is healthier now than at any time since most people have lived here." A century ago, beavers had created a similar environment, building dams that slowed the river's flow. But the dammed areas drew so many mosquitoes that malaria ran rampant. Outraged residents trapped the beavers and blew up the dams.

Federal and state biologists are now proposing to reintroduce beavers to the San Pedro and to build a $2.7 million visitors' center to enhance the river's educational value. But if the agencies aren't careful, there may not be a river to visit much longer. Since 1943, the river's low-flows have dropped from an average of 4 cubic feet per second to just 1, according to the U.S. Geological Survey. Marsh grasses such as cattails and bulrushes have disappeared from some heavily pumped areas. University of Arizona hydrologist Thomas Maddock stirred up a political tempest in 1993 when he estimated that if the Sierra Vista area kept pumping water at current levels, some stretches would dry up within 20 years.

The river's well-being is not a popular cause locally. Sierra Vista is an isolated slice of suburbia, with a main street lined with strip malls and fast-food joints and with residents who regard the river primarily as a recreation spot. Until very recently, residents yawned at warnings of trouble, and state and federal agencies bowed in the face of local growth pressures. But even one Sierra Vista consultant now agrees with environmentalists that there are inherent conflicts between the town's growth and the preservation of the river. The economic engine driving this growth is Fort Huachuca—a U.S. Army base employing 12,000 people. The Fort's legal rights to San Pedro River water are a century older than the BLM's water rights for the riparian area. Now the city and the base, stung by complaints that they're water guzzlers, have undertaken conservation plans. They're also testing and designing a massive $5.3 million project to recharge treated sewage effluent into the ground to keep their pumping from drying out the river. If all proceeds smoothly, the system will be in operation in three years.

But because these technical fixes would be extremely costly and allow growth to continue, environmental groups are pushing to close the base. In August 1995, District Judge Alfredo Marquez in Tucson gave them a moral victory, even as he dismissed an environmentalist lawsuit because the statute of limitations on it had expired. He found that a U.S. Army environmental document had failed to satisfy federal requirements for studying the effects of the base's pumping on the river. "Creeping development and unrestrained draining of the aquifer represent a real threat," Marquez wrote. "The Army must not turn a blind eye to this problem or to the fact that its actions may tend to exacerbate it."

Sierra Vista officials have declared war on "environmental terrorists" and are raising a legal fund to fight the protection of endangered fish, plants, and birds living in and along the river. "The debate is really simple," the city government said in a recent press release. "On one side is an energized and radical environmental community whose only concern is the preservation of all other species regardless of the cost to the human race. On the other side is a community that is working hard and living by the rules, that is doing everything possible to be good stewards of the land and its resources, and that is committed to having human hopes and dreams valued and realized."

This harsh rhetoric, however, seemed remote that day in July as I watched volunteers in the MAPS program striding along the river. The volunteers—ranging from local Audubon members to professional ornithologists—would walk to one of the black nylon mist nets strung across the willow trees and untangle the trapped birds. Then they would take the birds to a long, metal table where other volunteers banded them. The atmosphere was festive. Banders cried out at the sight of their favorite birds; Song Sparrows and Summer Tanagers were especially popular. When a small, faintly blue-tinted, breeding male Lazuli Bunting turned up in a net, BLM biologist Krueper yelled "Yes!" like a sportscaster calling out a three-point play on a basketball court. Though this bunting is common on the river in August, after the breeding season, this was the first documentation of a breeding Lazuli Bunting on the river in eight years, adding another notch to the San Pedro River's belt.

Will the San Pedro River survive and continue to improve? If the confidence and dedication of its supporters are any indication, the river's future is assured. "Failure is not an option here," said Krueper when asked about the river's chances for survival. "We're definitely not going to fail." ■

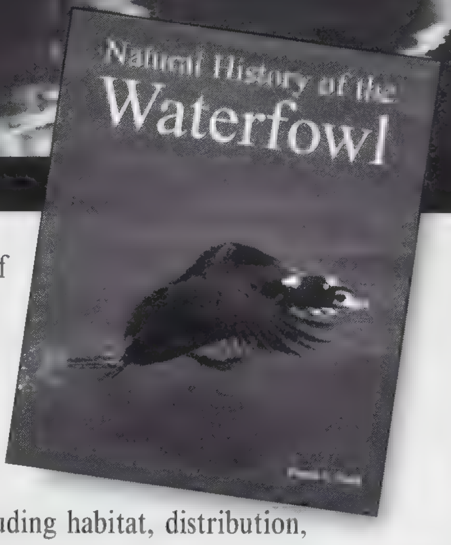
A male Vermilion Flycatcher (far left), looking stunning in his flaming crimson plumage, is now a common sight along the San Pedro River. With more than 200 pairs of Yellow-billed Cuckoos (above) living there, this conservation area holds one-fourth of the species' western population.

STEVE BENTSEN

Tony Davis is a reporter at the Statesman Journal, *a newspaper in Salem, Oregon.*

Natural History of the Waterfowl

by Frank S. Todd



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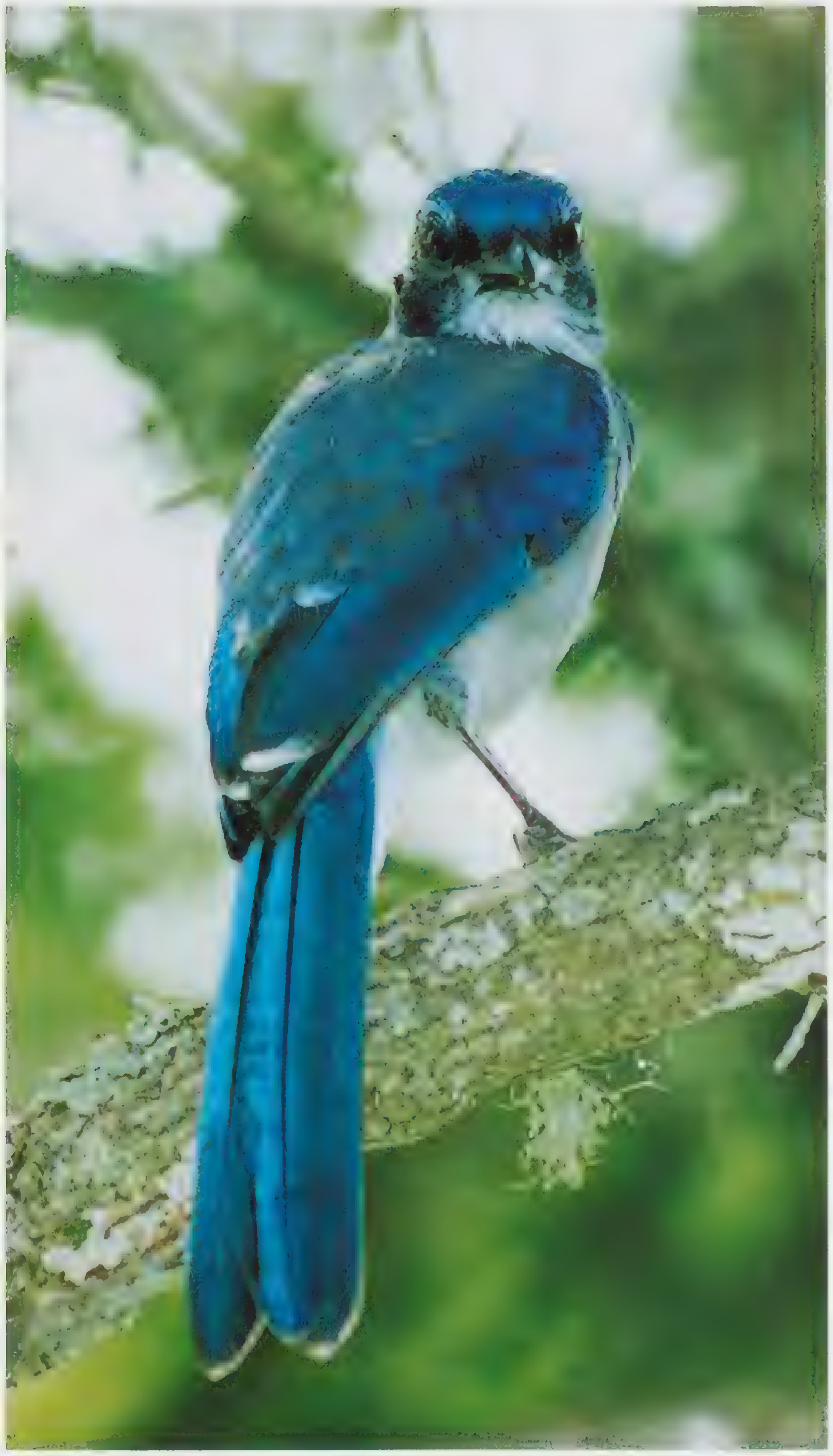
A CASE OF HYBRIDIZATION

Text and photograph by M.C. and Amanda Morgan



This past summer, three young Florida Scrub-Jay/Blue Jay hybrids showed up in a suburban yard in Florida. Each of them had distinguishing features of both species.

Do Florida Scrub-Jays ever interbreed with Blue Jays? Before this past summer, not one confirmed case of hybridization between these two species had ever been documented. But then Maureen Loliva, a bird watcher in St. Johns County in northeastern Florida, spotted a scrub-jay with three unusual young in her suburban yard.

Seeing a Florida Scrub-Jay in itself was unusual in this area—the species was thought to have been extirpated from the county in the 1970s because of habitat destruction—however, Loliva had found a pair of them on her property the year before. Unfortunately, one of the birds was killed in a window collision, and its surviving mate was then often seen in the company of a Blue Jay. The bird disappeared for two months during the spring of 1996 but reappeared in July with three juveniles. Each of these young, to varying degrees, had distinguishing features of both species.

We sent close-up photographs of the birds to Reed Bowman, a biologist at the Archbold Biological Research Station who specializes in the population biology of scrub-jays in suburbs. He reviewed the pictures with Glen Woolfenden and other ornithologists across the country and confirmed that the birds were indeed hybrids. According to Bowman, the faint barring on the white-tipped blue tail, secondaries, and secondary coverts is indicative of a Blue Jay, whereas the dark cheek is consistent with a scrub-jay's plumage. The light gray mantle and upper back is also typical of a scrub-jay; however, the overall shape of the bird is more suggestive of a Blue Jay. He added that although hybrids between other jay species (Blue Jay and Steller's Jay, Blue Jay and Green Jay) have been reported, this is the first documented case of hybridization between a Florida Scrub-Jay and a Blue Jay.

What is the significance of this unusual event? Is it simply a fluke that occurred because the bird could not find a replacement mate of its own species in this degraded habitat? Or is this just one more harbinger of bad news for the Florida Scrub-Jay as its numbers and the scrub habitat it depends on dwindle? Only time and further research efforts will tell. ■

IN PRAISE OF JINX BIRDS

by Mel White

Sometimes a birder just has to say, like the Terminator, "I'll be back."

One night 10 years ago, in a motel in Patagonia—this would be the one near Tucson, not Buenos Aires—a group of us was deciding where to go birding the next day. It came down to a choice between the desert and the mountains, which is the kind of steak-or-lobster menu option that makes a visit to southeastern Arizona so delicious: Rufous-winged Sparrow for breakfast, Red-faced Warbler at tea time.

I opted to join the people going to Madera Canyon and so caravanned up into the Santa Rita Mountains to scope the hummingbird feeders and walk through the pines. Another group piled into a van and drove west from Nogales, toward California Gulch and Arivaca. They didn't plan on doing any hiking, just road-birding, poking along and seeing what they could find.

Our bunch had a pretty good day, although the highlight, as I remember it, was not a bird but a colorful little black-tailed rattlesnake peacefully curled up alongside the Mt. Wrightson Trail.

When we rendezvoused with the others later, the first words out of my friend Jane's mouth were, "We saw a Montezuma Quail!"

"From the van," Andrew said. "It was right beside the road."

"Gosh darn it," I said, or something similar.

All through dinner, Jane wouldn't let it rest. "It was so beautiful!" she said. "The picture in the field guide doesn't do it justice at all."

"That crest really stands out," Andrew said. "It was like a golden stripe on top of its head."

"You son-of-a-guns," I said, more or less.

Four years later, I was walking in the hills south of Patagonia with a fellow who knows the birds of the region well. He knelt down and pointed to some marks in the dirt.

"That's where Montezuma Quail have been scratching around for seeds and things," he said. "They must have been here earlier this morning."

Quail footprints . . . what next, an old campfire? "Ashes still warm, Kemosabe. Birds only two, three hours ahead of us."

In five visits to southeastern Arizona, I haven't seen a Montezuma Quail, though I've looked for them at Gardner Canyon and Canelo Hills, at the Audubon Research Ranch, and Peña Blanca Lake. On the first few trips I wasn't concerned much about the bird—there were too many others to appreciate. But, lately, this void on the checklist has begun to prey upon my mind.

Montezuma Quail is a jinx bird for me. It may be *the* jinx bird, but comparison in this matter is not a subject I enjoy contemplating. It's something like deciding whether you'd rather be broken on the rack or drawn and quartered. Is Montezuma Quail more of a jinx than, say, Lewis's Woodpecker, another bird I've spent hours searching for, a bird for which three different people have given me detailed directions to four different spots, to absolutely no avail?

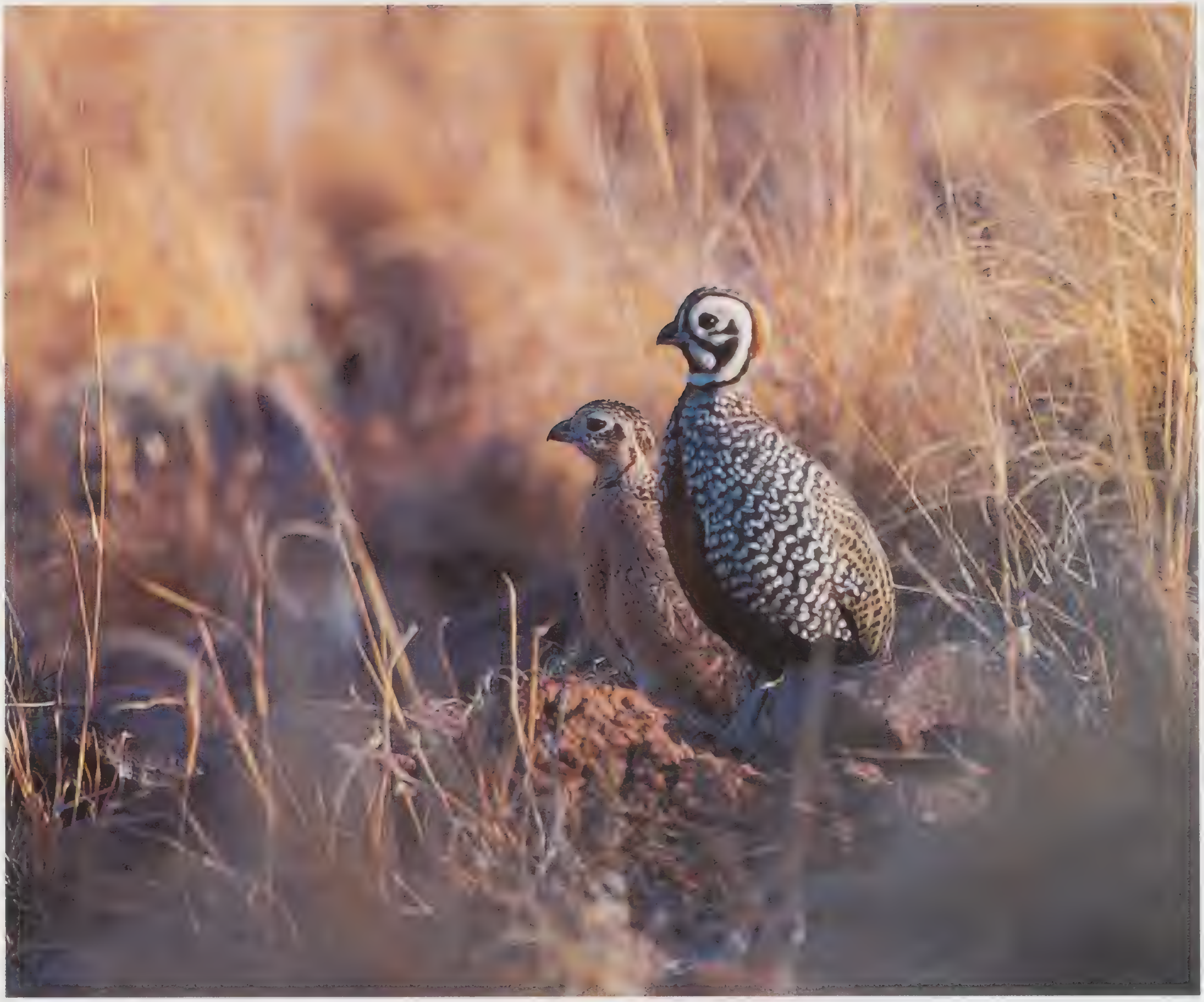
Don't ask. I don't know.

The question of what constitutes a jinx bird is not too painful to consider, though. On those same five trips to Arizona I could, for instance, have found a Whiskered Screech-Owl. I haven't, and yet I don't consider it a jinx. Why? I haven't expected to see it, for one thing, and I haven't looked for it, for another thing, and besides, it simply wouldn't be that thrilling to see. Let's face it: no matter how many ways the taxonomists split the pie—Eastern, Western, Balsas, Vermiculated, Bare-shanked, and so forth—aesthetically speaking, a screech-owl is just a screech-owl. Whiskered Screech-Owl doesn't push my *I WANT* button. Montezuma Quail does.

Despite the petulance of some of the foregoing, I come to praise jinx birds, not to harry them. Or, at least, to express a grudging appreciation. Today, when so much of the country (and world) is covered by comprehensive finding guides—look left at the third telephone pole for Burrowing Owls—a certain amount of uncertainty is welcome. The challenge of searching for unimagined rare strays isn't the same as the tantalizing tease of looking for something you know is there: it could be around the next bend, over the next hill. It's the same hope-cum-addiction that keeps a gambler at a slot machine, knowing that a payoff is coming if he just keeps pulling the handle long enough. After a time the quest becomes an almost personal contest, with its own unique machinations of plot. What would the Arthurian legend be without the Holy Grail? Or, perhaps more to the point, what would *Les Miserables* be if Jean Valjean didn't haunt Inspector Javert's dreams?

And besides, like a toothache, it feels so good when it's over.

How many hours did I spend walking across the Colorado tundra looking for White-tailed Ptarmigan? At



TOM VEZO

"In five visits to southeastern Arizona, I haven't seen a Montezuma Quail, though I've looked for them at Gardner Canyon and Canelo Hills, at the Audubon Research Ranch, and Peña Blanca Lake. Lately, this void has begun to prey on my mind."

12,000 feet, a gentle stroll is challenging all by itself, and with every labored step, the roly-poly ball of fluff became more of an obsession.

I met a ranger up by Chasm Lake in Rocky Mountain National Park one day and stopped her to ask how I could find a ptarmigan. "Sit down and wait for a rock to move," she said. That was easier than hiking, but it didn't work either. It was my sixth trip (spread over nine years) before I finally walked, purely by accident, into the middle of a little group of the birds. By then, it was a lot more satisfying—and just plain fun—than if I'd found them on my first trip west.

When I saw for myself the ptarmigans' incredible camouflage, I didn't feel so bad about overlooking them before, and thanks to their almost-absurd tameness, I had plenty of time to examine them closely. Since then I've seen them just about every time I've been back to Colorado—but that's a peculiar phenomenon of birding that we all know about.

As frustrating as Montezuma Quail and Lewis's Woodpecker have been for me, neither has yet drifted over the line into that last stage of birder's paranoia, in which the sufferer starts to refer to, for example, "the mythical Le Conte's Thrasher." Here, it begins to seem as if a plot existed to dupe people into thinking that, no matter how often they've visited a place, yet one more species forever waits to be ticked off their life lists. This would obviously require a grand and outlandish conspiracy among field-guide illustrators; photoretouchers; site-guide writers; local chambers of commerce; and probably the Bureau of Alcohol, Tobacco, and Firearms. And of course I realize that, except in the case of the Hook-billed Kite, it is absolutely not true.

Not long ago I was walking a trail in Santa Ana National Wildlife Refuge, in south Texas, when I came upon a couple of leaders for a well-known birding tour company. These were famous and well-respected guides; you would know their names if I dropped them. One of them, I believe, recently discovered a new species of gnatgleaner,

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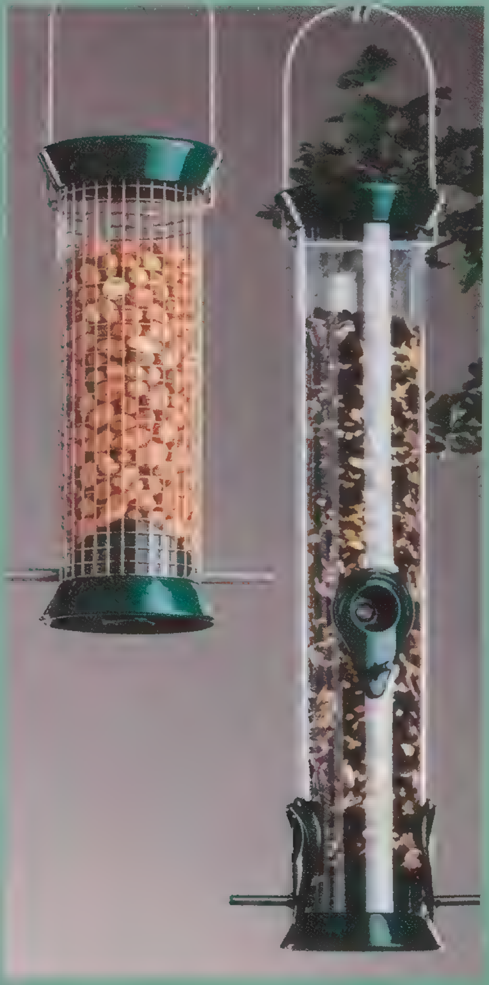

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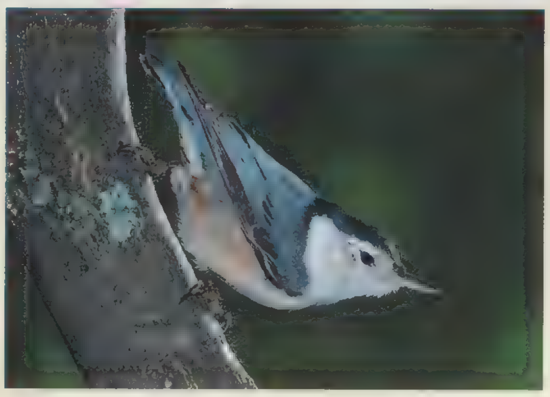

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or some such, on an island off the coast of Moldova. For me to meet them was equivalent to a 15-handicap golfer running into Greg Norman and Nick Price on a practice round, and I took the opportunity to chat for a moment.

As we were parting, I asked, "Say, do you have any advice about seeing the mythical Hook-billed Kite?" I said this with a little arch in my left eyebrow, to let them know that I was in on the joke.

But instead of laughing and slapping me on the back—"Hook-billed Kite? Ha! That's a good one, ain't it?"—like the buddies I wanted them to be, they suddenly got all solemn and professorial. They told me, with apparently well-practiced seriousness, that the kites spend most of the time perched quietly; around midmorning, just as the air warms up, they take off and soar for 20 minutes or so. If I were to watch the treetops then, they said, I might see one.

Man, was I disappointed. Here I was, trying to impress these guys with my birding savvy, and they instantly sized me up as just another sucker donating money to the McAllen, Texas, economy by way of the Motel 6 and the Taco Cabana—just another gullible lister in vain pursuit of something as nonexistent as the Loch Ness Monster.

As I leaf through the field guides, contemplating my personal jinx birds, I remain willing to accept the possibility that a shy, semi-camouflaged, hard-to-flush quail actually exists in the vast grasslands and savannas of southern Arizona. Indeed, I can easily believe that such a creature could elude me indefinitely. But the idea that the few remaining scrawny woodlots of the lower Rio Grande Valley could hide a medium-sized, well-marked raptor with a bill like a scimitar . . . the idea that the kite sits around daydreaming all day except for a regular exercise period every morning . . . the idea that I could miss this thing on four serious birding trips to the valley . . .

Listen, I'd love to discuss this with you some more, but I have to go check out a really convincing report of a unicorn. ■

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The Catbird Seat

NUMBING THE NON-BIRDING MIND

By Pete Dunne

You've never met my brother Mike. He's what you'd call normal—wife, kids, house in the suburbs; plays a little golf; watches football on the tube; lives for his lawn. No, you've never met Mike, but you probably know people like him. You'll understand, therefore, why I was having such a tough time convincing him that birders are normal.

We were standing on the hawk-watch platform at New Jersey's Cape May Point State Park. I was looking at hawks. Mike was looking at hawk watchers.

"You mean people do this of their own volition?" he whispered.

"Yes. They travel hundreds, even thousands of mi . . . PEREGRINE OVER THE BUNKER!" I yelled, and 100 pairs of binoculars swiveled with the precision of a parade-ground maneuver.

"How'd you get them to do that?" he demanded. "It's like some kind of totalitarian cult."

"Hardly," I replied. "Birders are pretty independent."

"I'll say," he said, taking in the assortment of outerwear that ranged from Orvis refined to Salvation Army discard (but leaning heavily toward Salvation Army). That's when someone produced a road-killed Virginia Rail and started passing it around. Mike didn't say a word, but his eyes spoke volumes.

To people whose greatest aspiration is to have a close-cropped lawn, I suppose the antics of birders do appear odd. Normal people sleep in on Saturday until the sun stops casting shadows. Birders get up *before* the sun casts shadow. Normal people find a bird dropping on the hood of their freshly washed car and go ballistic. Birders look up to see what is nesting on the overhanging limbs.

In my efforts to paint a palatable picture of my avocation I have avoided telling Mike about some of my more suspect adventures. I never told him about that midnight encounter on an elevated railway two miles out in a marsh. The tracks were not roomy enough to accommodate our Big Day quintet and the oncoming train so we, being gallant, elected to step into the marsh. I never told him about the time Patty Hodgetts skidded to a halt on an iced-over exit ramp on I-95 to show me my life Northern Hawk Owl or the time Bob Burke and I canoed through an ice-choked Delaware River on the Walnut Valley Christmas Bird Count to find a Bufflehead to add to the count. "It's okay," I explained to the nearly apoplectic ranger who met us at the landing. "We had life preservers and we only had to chop ourselves free twice."

I've never told Mike about winter pelagic birding trips—how people will pay money and throw up all day for the chance of seeing a Great Skua—or about the liquid-purging walk down Sycamore Canyon, whose prize is a drab-looking sparrow that defines its territory vertically. And I certainly never told him about Attu. Explaining to a normal person why birders are willing to pay the price of a luxury cruise to spend three weeks on a remote Alaskan island in a building that makes a bomb shelter seem luxurious is beyond my skills (and his comprehension).

I never told him how a student living on a budget that wouldn't sustain an anorexic cat can afford to brandish $1,500 binoculars. Or why a doting father would risk a daughter's heartbreak (and a wife's wrath) and get to the church after the wedding is over, convinced that "getting the bird" would provide absolution.

It was all I could do to explain why a bunch of people passing a dead bird around constituted normal behavior. "It's an opportunity to study a rarely seen bird up close," I explained. "The same as having study skins but better, because the plumage is fresher."

"You people keep dead birds?" he asked, not really believing me.

"Just the skins," I explained. "Until we're ready to prepare them, we store them in the freezer."

"You keep dead birds in the freezer?" he asked, believing me even less.

"Sure," I said, discreetly avoiding mention of the dead otter that was also taking up freezer space. "We've got permits. It's legal."

The fact that there were laws governing such behavior seemed to comfort Mike. If birding was regulated like everything else, maybe birding was, indeed, normal.

That's when someone yelled "Wheatear" and several hundred people stampeded to the far side of the parking lot and clambered atop the roofs of cars, in some cases not their own. It was the only way to get a look at the bird.

"Want to see it?" I asked.

"I don't think so," he replied.

"Well . . . I'll see you later," I said, edging away.

"Later," he said, edging the other way.

The next time we saw each other it was Christmas. The subject of birding never came up. ■

ILLUSTRATION BY JEFF SIPPLE

Study Wildlife Sound Recording with the Experts

Learn state-of-the-art techniques for recording wildlife sounds with experts from the Lab's famed Library of Natural Sounds. Our workshop runs from June 7 to 13, 1997, at San Francisco State University's Sierra Nevada Field Research Station in the Tahoe National Forest. The station, 6,000 feet up amid ponderosa and Jeffrey pines, affords a wide range of recording conditions in spectacular surroundings.

Topics to be covered include the selection and application of audio recorders and microphones, recording theory, metering, recording techniques, and documentation for sound recordings. The course includes daily field recording sessions and lecture/discussions. Unique to this course is the use of microcomputer-based software to analyze the recordings and to investigate microphone and recorder performance.

Your instructors will be Greg Budney, curator of the Library of Natural Sounds; Bob Grotke, the Library's sound engineer; Randolph Little, Lab associate and AT&T electrical engineer with extensive recording experience; and David S. Herr, U.S. Forest Service biologist and sound recordist.

Accommodations are rustic but comfortable. Lodging will be tents on platforms (mattresses are provided); the main lodge houses dining and bathing facilities.

Your $625 workshop fee includes tuition, class materials, ground transportation, food, and lodging. Enrollment is on a first-come first-served basis with a nonrefundable $100 deposit required to reserve a space. Enrollment application and deposit must be received by April 11, 1997. **Balance due by May 10**. Participation is limited to 16. Participants may register for two college credit hours, at $45.00 per hour, through San Francisco State University's Biology Department. Payment for college credit is made to the Cornell Laboratory of Ornithology along with the enrollment fee.

For more details, contact the Library of Natural Sounds, Cornell Laboratory of Ornithology, 159 Sapsucker Woods Road, Ithaca, New York 14850; phone: (607) 254-2406; fax: (607) 254-2439; e-mail: libnatsounds@cornell.edu; or visit our web site at http://www.ornith.cornell.edu. Please note: Workshop participants should bring a tape recorder, microphone, and tape; those needing equipment should contact the Library as soon as possible. A limited amount of recording equipment is available on a first-come first-served basis.

STEVE PANTLE

Please enroll me in your 1997 Natural Sound Recording Workshop at the Sierra Nevada Research Station.

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☐ Enclosed is my check for $715 to cover the cost of the workshop and college credit.

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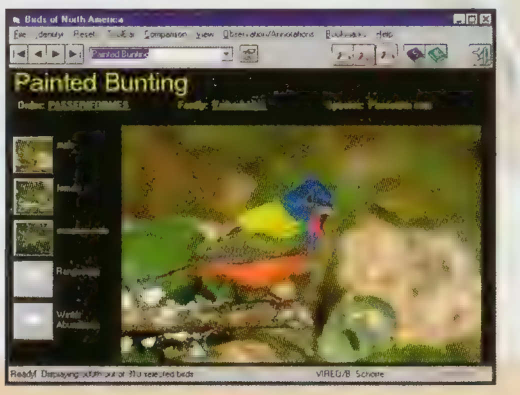

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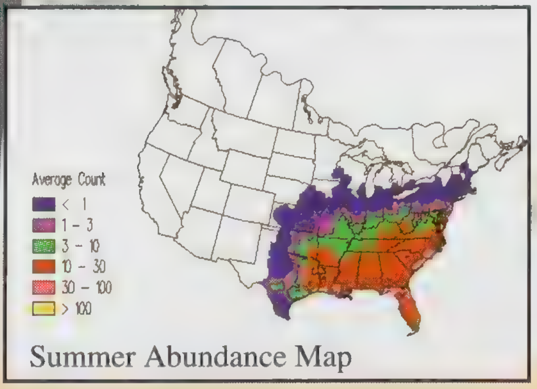

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LIVING BIRD

SPRING 1997 VOLUME 16 NUMBER 2

GREETINGS FROM SAPSUCKER WOODS

As I write this column, I feel peaceful and very grateful to be here in my office, looking out at the pond and Sapsucker Woods Sanctuary. Late last year, just before Christmas, two *Living Bird* staffers—design director Kat Dalton and associate editor Leslie Intemann—and I were involved in a horrendous automobile accident as we were returning from the winter issue's press run. Though we all received fractured bones, cuts, and bruises, Kat, who broke a vertebra and three ribs, was hurt by far the worst. Fortunately, her spinal cord was not injured, and she is recovering fully, but she has had to spend three months at home, wearing a body brace.

I'm happy to say that she has remained in good spirits throughout her ordeal, and she was able to direct the design of this issue, with the help of Steve Carver, who is serving as designer during her recovery. You may recognize Steve's name—he is a top-notch designer and artist, who has created many illustrations for past issues of *Living Bird.* We are glad to have him on board during this difficult time.

There's nothing like a serious accident—being taken away from a demolished car, lashed to a stretcher as a freezing wind and snow blows all around you—for giving you a wake-up call. You become instantly hyperaware of the truly important things—your family, your children, your friends, the entire world of nature outside—and this awareness fills you with a sense of euphoria at the wonder of life.

As I watch the trees through my window, I look forward longingly to the coming of the first green leaves, the shrill nocturnal din of spring peepers, and, above all, the hordes of migrants that will soon flood Sapsucker Woods: warblers, tanagers, flycatchers, vireos—the feathered treasures that make this season so special. I know this spring will be like no other in my life.

— Tim Gallagher
Editor-in-Chief

Cover: Spring is bursting out all over as this pert Black-capped Chickadee sits in a flowering pussy willow. Marie Read captured this pleasing portrait outside her home in Freeville, New York. Originally from Britain, Marie is an up-and-coming nature photographer who has been published in numerous magazines both here and abroad. Her photographs have previously appeared on the front and back covers as well as the inside of this magazine.

Right: A male Yellow-headed Blackbird enthusiastically belts out his raspy, somewhat less than musical song. To find out about the best tools for learning to identify this and other birds by sound, read the article on page 22. Photograph by Lang Elliott.

Back Cover: A Least Bittern peers out from some lush aquatic vegetation in Texas. Photograph by Tom Vezo. See more of Tom's work in the photo-essay beginning on page 16.

8 A WORKING RANCH *by Peter Idema*

Is cattle ranching compatible with habitat conservation and outdoor education? At Wyoming's Breteche Creek Ranch, the answer is yes.

16 FOR THE LOVE OF BIRD PHOTOGRAPHY
photographs by Tom Vezo

Everyone dreams of changing careers. Tom Vezo actually did it, giving up a business to roam the world, photographing birds.

22 A SOUND EDUCATION *by Kristi G. Streiffert*

Learning to identify birds by their songs will make you more effective as a birder—and as a conservationist.

28 MATING GAMES *by André A. Dhondt*

In Blue Tit nests across Europe, it's the female who rules the roost when it comes to the particulars of the mating game.

Departments

4 LETTERS
5 BIRDNEWS
37 CRITICS' CORNER

Columns

6 SPOTLIGHT *by David Wilcove*
Buried Treasures
34 PICTURE PERFECT *by Tim Gallagher*
Birds in Flight
38 THE CATBIRD SEAT *by Pete Dunne*
Binocular Reality

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SPRING 1997 VOLUME 16 NUMBER 2

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Letters

ARTHUR MORRIS/BIRDS AS ART

REMEMBERING RTP

Thank you for the wonderful tribute to Roger Tory Peterson you printed in the "BirdNews" section of your most recent issue. I was especially touched by Tim Gallagher's description of meeting Roger for the first time and having him sign the field guide he'd had since childhood. I had a similar experience when I went to a book signing in New York City more than 30 years ago. Though it happened so long ago, the event still stands out in my mind. What an amazing man Roger Tory Peterson was and what a great loss to all of us when he passed away.

William Tilden
San Francisco, California

Roger Tory Peterson did more for bird watching and for the well-being of wild birds than anyone else I can think of in this century. His art, his writing, and his enthusiasm fired up generations of naturalists, as well as millions of people from all walks of life who have a greater appreciation of the natural world than they would have had without his example. I'm so glad that you remembered him and saw fit to pay him tribute in *Living Bird.*

Elizabeth Lindsay
Seattle, Washington

THANKS FOR THE MEMORY

Your recent and interesting article, "Dorothy McIlroy: Ithaca's First Lady of Birding" (Winter 1997), provoked many fond recollections of my youth as an amateur bird watcher 75 years ago. Bobolinks were common in our rural farm area then, and I remember their songs: *bob-o-link, spink, spank, spink.* With the advent of suburban sprawl from farm to residential, I have not seen a Bobolink in 70 years and know not where they may now be observed. I would welcome again enjoying their calls. Thank you for your rejuvenation of my youth.

Harry Werrmann
Liverpool, New York

The article about Dorothy McIlroy's birding life in the Winter 1997 issue of *Living Bird* brought back memories of many pleasant hours I spent in her husband's electrical engineering courses in 1949 and '50. My interest in birding goes back to 1943 when I took a bird-study merit badge in Boy Scouts. Unfortunately, I haven't pursued it as actively as I would have liked since then. Best wishes and continued good birding for Dorothy and her family.

George Adams
Manlius, New York

I really enjoyed reading Allison Wells's fine article on Dorothy McIlroy. It captured a fascinating time in the history of American bird watching and an amazing place—Ithaca, New York.

Malcolm Turner
New York, New York

We welcome letters from readers. Write to The Editors, *Living Bird,* 159 Sapsucker Woods Road, Ithaca, New York 14850, or send e-mail to <livingbird@cornell.edu>.

BirdNews

Arizona Condors?

Birders visiting northern Arizona now have an interesting additional species of bird to look for: the California Condor. Six young captive-bred condors—five from the Los Angeles Zoo and one from the World Center for Birds of Prey in Boise, Idaho—were set free at the Vermilion Cliffs release site on December 12, 1996. The birds had been moved to the site a month earlier and kept in a large flight enclosure so they could get accustomed to the area.

Located some 60 miles north of the Grand Canyon, Vermilion Cliffs is the first area outside of California where the condors have been released. "If we sat down and designed a release site, taking into account all the factors we would need to help ensure a successful release, we could not have done better than the Vermilion Cliffs," says Mike Wallace, curator of birds at the Los Angeles Zoo and Condor Recovery Team leader.

The area is remote, and with 40 miles of vertical cliff face averaging 1,000 feet or more in height, Vermilion Cliffs is a superb place for young condors to perfect their flying. An additional plus is the release site's relatively close proximity to the Grand Canyon. The canyon has great potential as a place where the condors could forage and eventually breed.

As this issue of *Living Bird* goes to press, the entire world population of California Condors stands at 118 birds—25 of which are in the wild. Though this is a precariously small number of birds, it is an amazing jump from the 27 birds that existed just a decade ago in 1987. At that time, all the remaining wild condors were captured to be used in an ambitious captive-breeding attempt at the San Diego and Los Angeles Zoos. The effort was so successful that by 1992, young, captive-produced condors were being reintroduced to the wild in California. More releases are planned at the end of this year, both in Arizona and California. Researchers eventually hope to establish separate breeding populations of California Condors in each of these states.

— *Tim Gallagher*

W. BURNHAM/THE PEREGRINE FUND

The young condors spent a month in a flight enclosure at the Vermilion Cliffs release site (above) before being set free.

Recollections of a Friend T. Spencer Knight

(1901-1997)

Friendships are the prized building blocks of life. The Lab of Ornithology is certainly built on them. Such was the Lab's friendship with T. Spencer "Spence" Knight, a gentleman in every sense of the word. Spence's history as a member of our administrative board and a prominent supporter reaches back to the Lab's early years. At the 1957 ribbon-cutting ceremonies for the grand opening of the Lab's Sapsucker Woods facility, one smiling gentleman towered over the rest—not only in stature but in his nature as a leader, a mentor, a reliable friend, and a visionary who grasped the germ of a great idea and helped shape it into the Lab of today.

C. HADLEY SMITH

Spence Knight, shown above in a photograph taken in the 1950s, had a close relationship with the Lab for more than four decades.

Spence's friendship and commitment to the Lab were unfailing, from the day he first introduced himself to Lab founder Arthur A. Allen until the final hours of his life. For half a century, Spence provided a constancy of leadership during changing times. His remarkably upbeat personality, his generous nature, his dedication to bird conservation, and his overwhelming desire to reach for the better guided the Lab through good times and bad. His patient, guiding hand is evidenced in every program at the Lab today.

I write as though I had known Spence for a long time—I hadn't. My acquaintance with him was but a miniscule part of a long, productive life. When I met him 12 years ago, Spence was already an octogenarian. He greeted me, the newcomer, as though I were a longtime comrade. During our years of working together, Spence, his cherished wife, Mabel, and I became good, reliable friends, in every sense of the word. Spence Knight will be greatly missed.

— *Scott Sutcliffe*

Spotlight

BURIED TREASURES

by David Wilcove

Never turn down a chance to see a new species.

Whatever success I've had in bird watching has stemmed from following some simple rules: try to visit interesting places, spend as much time as possible in the field, and never turn down an offer to see a new species. So when Wildlife Conservation Society biologist Margaret Kinnaird asked, "Would you like to look for Maleos?" I enthusiastically said yes, even though, truth be told, I had only the vaguest idea what a Maleo was. I knew it belonged to the megapode family, a group of chicken-like birds scattered around the Australia-Malaysia region. I knew this particular species was restricted to Sulawesi and adjacent islets in Indonesia (where I happened to be). And I knew it was endangered. What I didn't know is that it is one of the strangest birds on earth and something of a lesson in the history of vanishing species.

Two days later, in predawn darkness, our little group climbed aboard a motorboat and puttered along the coastline until we reached an isolated beach. A sleepy graduate student, part of a team studying Maleos, met us at the shore and led us through the open forest adjoining the beach, to a small tree with a rickety blind nestled in its branches. By now the sun was up, and we quickly scrambled up the tree and into the blind, lest the Maleos spot us before we spotted them.

Once inside the blind, I began to pay more attention to my surroundings. Much of the ground was covered by trees and shrubs, but the area immediately in front of us looked like a bombing range—open, sandy areas with deep craters scattered all around. These "craters," I was told, were the nests of Maleos. Unlike virtually all other birds, megapodes do not use their own body heat to incubate their eggs. Instead, they rely upon three external sources of warmth: solar power, geothermal power, and compost power (the heat generated by decomposing vegetation). Maleos in particular use the first two, burying their eggs in sun-warmed sand or in places heated by subterranean volcanism. They are communal nesters, with multiple pairs using the same small stretches of beach, generation after generation.

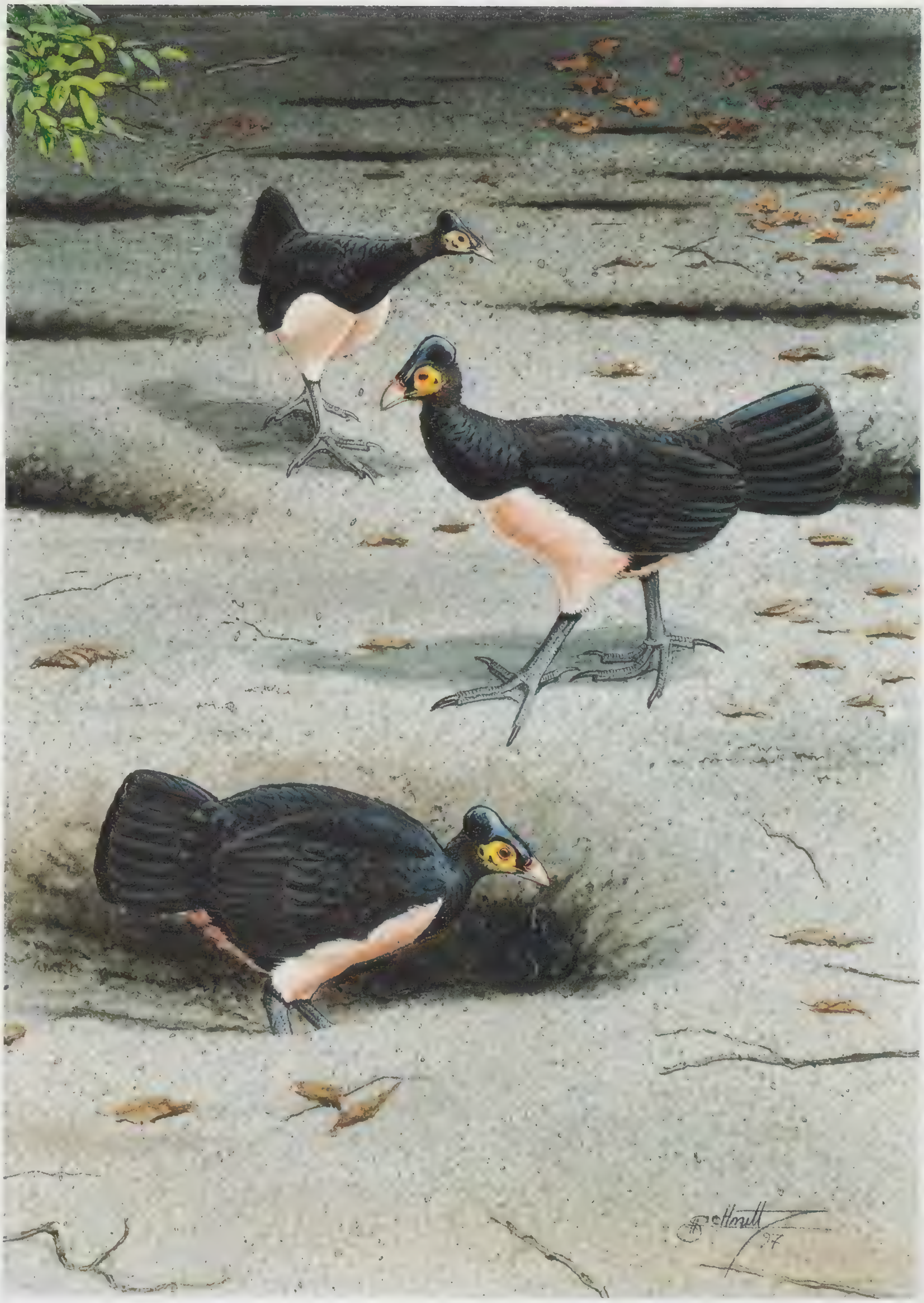
As we usually learn in childhood, the surface of a sandy beach can be painfully hot, with temperatures reaching 50 to 80 degrees Celsius. Yet, just a few centimeters below the surface, the temperature is a relatively moderate and stable 32 to 38 degrees Celsius, well suited for incubating eggs. The Maleo excavates a hole, deposits its eggs at the right depth, and then covers them up. Both male and female Maleos share in the task of digging the incubation pit, a process that can take upwards of three hours. The refilling takes nearly as long, in part because the birds dig several dummy pits nearby to confuse predatory lizards and pigs.

The chicks hatch fully feathered and capable of flight—they allegedly scramble to the surface and "explode" into flight—and receive little or no parental care. For such a precocial chick to be born, considerable development must take place within the egg, necessitating both a large egg and a long incubation period. The Maleo, in fact, lays an astonishingly big egg for a bird of its size. Each one equals about 16 percent of the female's body weight (versus 3 percent for a comparably sized chicken). The incubation time for megapodes, which may last as long as eight to nine weeks, is exceeded only by the largest albatrosses, penguins, and kiwis. (In contrast, the incubation time for a chicken egg is about three weeks.)

Laying big eggs in beach sand is a recipe for trouble in a world of hungry people, as evidenced by the decline of the world's sea turtles, virtually all of which are endangered because people have overharvested their eggs. The Maleo is facing a similar threat. Of the 85 Maleo nesting grounds discovered to date, a quarter are now abandoned, largely because of human disturbance. Several others are threatened by overexploitation. Nor is egg predation the only threat to the species. Although Maleos nest in open areas, they spend most of their time searching for insects, seeds, and fallen fruit in lowland forests and foothills, which are being cleared at a rapid rate for agriculture. I also suspect that the introduction of cats and dogs to Sulawesi has caused additional trouble for Maleos, inasmuch as the island had only one native carnivore.

Because all megapodes share the Maleo's habit of burying large eggs in the ground, one might expect other members of that group to be in trouble, too. In fact, few families of birds have a higher proportion of threatened species than the megapodes. According to BirdLife International's authoritative book *Birds to Watch 2: The World List of Threatened Birds,* 8 of the 19 species of megapodes are in danger of extinction—a whopping 42 percent of the species, compared to an average of 11 percent for all birds. Habitat destruction is the leading cause of their endangerment, affecting at least seven species. This is followed closely by overexploitation, which contributes to the endangerment of at least six

ILLUSTRATION BY JOHN SCHMITT



species. Predation by introduced (non-native) animals is the third most-frequent threat, affecting at least four of the eight endangered megapodes.

This trilogy of threats—overexploitation, habitat destruction, and harmful exotics—should sound familiar to students of North America's own battered avifauna. Overhunting was the primary factor behind the first modern wave of extinctions on this continent, contributing to the demise of the Great Auk, Labrador Duck, Carolina Parakeet, and Passenger Pigeon. This was followed by a second wave triggered by habitat destruction, which took out the Ivory-billed Woodpecker and Bachman's Warbler. Hunting is now carefully controlled and poses no threat to the vast majority of species, but habitat destruction continues apace. It will soon, I predict, be joined by a third wave, consisting of harmful non-native species. Exotic species are hammering the flora and fauna of the Hawaiian Islands, and it is only a matter of time before their impact becomes more apparent on the mainland. Non-native red foxes are dining on threatened California Clapper Rails in San Francisco Bay; tamarisk plants from Asia are destroying the riparian habitat of the endangered Southwestern Willow Flycatcher.

None of these thoughts was on my mind that hot, sticky morning as I sat in the blind and stared at the nesting grounds of the Maleo. I realized that I had no clear idea what a Maleo looked like, and I felt rather ashamed of myself. But as the hours went by with no activity at the nest, my ignorance hardly seemed to matter. And then suddenly, I found myself staring down at one of the strangest birds I have ever seen. Its back and wings were a cold slate gray, its breast and belly a light salmon pink. A flattened, fan-shaped tail was held up high like a rooster's. Most striking of all was the bird's head, which featured a strange "horn" protruding from the top of its skull. A bird designed by Dr. Seuss, I thought. A second Maleo stepped out from the brush and together the two of them began digging at one of the nesting pits, throwing little clouds of sand into the air with each kick of their feet. Our clumsy efforts to photograph the birds must have alerted them to our presence. They glanced up at the blind and burst into flight, disappearing into the forest.

Walking back to the motorboat, I decided there was no better way to spend a morning—on a tropical island, atop a tree, inside a wooden box, waiting for Maleos. The rules worked: never turn down the opportunity to see a new species, because you may not get a second chance. ■

A WORKING RANCH

BY PETER IDEMA

Is cattle ranching compatible with habitat conservation and outdoor education? At Wyoming's Breteche Creek Ranch, the answer is yes.

Mounted on sturdy quarter horses, several riders pick their way slowly along a narrow, 8,000-foot-high ridge, holding on to their hats as a stiff breeze gusts from the valley below. Nicknamed "the divide," the ridge separates the north and south forks of the Shoshone River, just upstream from Cody, Wyoming. Snow-capped peaks rise high above the riders in every direction. To the south and west lie the rugged Absaroka Mountains—the peaks of Yellowstone National Park clearly visible—while to the north the Beartooths march up into Montana. Though the scenery is spectacular, these riders did not come here for the view alone. Led by Lab of Ornithology director John Fitzpatrick, they are heading for patches of forest in the high country for a glimpse of a Gray Jay, a summertime rarity this far from Yellowstone.

As one of the younger members of the group sits impatiently on his horse, starting to wonder when they will break for lunch, his father steals a longing glance back toward the base camp, now hidden among groves of aspens and stands of conifers 1,500 feet beneath them and a three-hour ride away. But their hunger is forgotten a few minutes later upon hearing an urgent "shhh!" from the other riders, who are pointing into the branches of a nearby pine. Lifting their binoculars to their eyes, they take in a gratifying, close-range look at their quarry: a Gray Jay, perched on a lower bough of the pine, hammering away at a cone.

These amateur birders, who range in age from 12 years old to more than 65, have come here from across the country to fine-tune their birding skills during a

This picturesque ranch is an on-going experiment in effective rangeland management, and it could set an example for scores of other western ranches.

LEFT: CHASE REYNOLDS EWALD. RIGHT: DANA BUCKLEY

CHASE REYNOLDS EWALD

Perched on the edge of the greater Yellowstone ecosystem, this 7,000-acre ranch is a haven for elk, deer, coyotes, moose, black bears, grizzly bears, and a full cross section of western birdlife.

week-long ornithology clinic conducted by Fitzpatrick. Though there's nothing unusual about taking a birding workshop—you can find them offered in Texas, Arizona, Florida, and a number of other top birding areas—the setting of this one sets it apart: a working cattle and horse-breeding ranch in northwest Wyoming.

Perched on the edge of the 19-million-acre greater Yellowstone ecosystem, this 7,000-acre ranch—called Breteche (pronounced "breh-teh-shay") Creek—is a haven for elk, deer, coyotes, moose, black bears, grizzly bears, and a full cross section of western birdlife. The ranch extends from the cottonwoods and hay pastures along the North Fork of the Shoshone River at an elevation of 5,300 feet, upslope through arroyos and sagebrush plains to moist aspen groves at 6,500 feet, coniferous forest up to 8,000 feet, and to the edge of the Shoshone National Forest, 30 miles east of Yellowstone.

DONALD M. JONES

The mosaic of habitats at Breteche Creek Ranch (at left)—ranging from cottonwoods and hay pastures at lower elevations, through sagebrush plains, then aspen groves, coniferous forest, and finally grasslands as you move higher—attracts a fascinating array of western birds. At the ranch, Gray Jays (above) are most often found in small patches of forest near the timberline.

"A lot of people drive into Yellowstone National Park through this east entrance," says Fitzpatrick. "Most of them are so focused on getting to Yellowstone, with its famous geysers, bison, and bears, they go right past this wonderful country along the Shoshone River without noticing how unique it is. The diversity of habitats there is phenomenal. The rain-shadow effect caused by tall mountains to the west has created a sagebrush desert on the lower slopes of the valley. You find magpies, Sage Thrashers, and Lark Buntings at the bottom. As you go higher up the slopes you go through sheltered riparian belts and aspen forest, where you find Red-naped Sapsuckers and later Williamson's Sapsuckers as you reach higher elevations. Near the timberline are grasslands with Blue Grouse and small patches of forest with Gray Jays. And the raptor diversity is phenomenal." This amazing variety of habitats is actually greater than that of Yellowstone.

The ranch's many habitat types reveal a mosaic of ecological themes common throughout the Rocky Mountains: water, slope, soil, and elevation. California Gulls, Bald Eagles, and the occasional American White Pelican cruise along the willow- and cottonwood-lined North Fork

CHASE REYNOLDS EWALD

In addition to traditional guest ranch activities such as horseback riding and cattle herding, Breteche Creek Ranch offers in-depth programs in natural history and the arts. Determined birders can find Northern Pygmy-Owls (at right) high on the north-facing slopes, in dense stands of conifers.

of the Shoshone River, which forms about two miles of the ranch's northern boundary. In the lower, flat portions of the ranch lie 300 acres of irrigated agricultural land supporting both Eastern and Western kingbirds, Western Meadowlarks, and Brewer's Blackbirds. Much of the ranch is arid sagebrush grassland dominated by big sage and bunchgrasses, where Green-tailed Towhees and Vesper Sparrows dart from shrub to shrub and Mountain Bluebirds scan the earth from perches atop low junipers. Riparian draws associated with four creek drainages support tall aspen trees that explode with the songs of Warbling Vireos, Western Tanagers, and MacGillivray's Warblers. Higher up, especially on north-facing slopes, Douglas-fir and limber pine form dense, mature forest stands. Lucky riding groups have admired pairs of diminutive Northern Pygmy-Owls inside these dark forest stands.

Towering throughout the ranch are huge cliffs and cathedral-like outcroppings of rust-colored volcanic rock. Golden Eagles and Prairie Falcons nest on these cliffs and often can be seen hunting the arid slopes below, dwarfing the White-throated Swifts that zoom about near the rocky summits. As guests ascend to the "retreat valley" (where summertime accommodations are based), they are treated to harsh screams of Clark's Nutcrackers and sweet ringing songs of Rock Wrens echoing across the valleys from high up the slopes. Nearly 100 different bird species were seen on the ranch in 1996. The list goes even higher if you count the birds you can see on a tour of nearby high mountains. A specialty of the region is the Black Rosy-Finch, which breeds along the snowfields at an elevation of 11,000 feet on Beartooth Pass—Charles Kuralt's "most beautiful highway in the world."

In 1995 Breteche Creek Ranch launched a formal effort to measure the bird diversity on its land. The owner wanted to find out how grazing by wild and domestic ungulates, such as elk, horses, and cattle, affects the diversity and abundance of bird species. Today, a ranch naturalist conducts regular bird surveys, and a ranch biologist studies elk distribution, forage use, and range production. This close attention to the relationships among the land, its wildlife, and its livestock hasn't always existed here.

When the ranch's owner, Bo Polk, bought the property in 1984, most of its rangeland was rated in poor to fair condition, based on the Bureau of Land Management's (BLM's) classification system: poor, fair, good, or excellent. The land had been overgrazed in the 1960s, with too many cattle concentrated on too little of the ranch's available area. Ranch manager Bob Curtis, a fourth-generation rancher in the area, knew it would take a major effort to improve Breteche Creek's rangelands and riparian areas. He started a holistic management program several years ago, using prescribed burning to promote new growth of vegetation; developing 7 of the ranch's 13 natural springs, increasing their flow to provide more water sources for wildlife in dry areas; and fencing off some pastures to keep cattle from moving freely from pasture to pasture.

"I saw a potential conflict between wildlife and livestock grazing patterns and realized something needed to be done," says Curtis. "I'd read about and observed the difference that holistic management had made in other places, and I decided that this would be the best approach for this ranch. It gives you a better feel for how everything works together—the wildlife, the land, and the livestock." The ranch now has a five-pasture system, and the cattle are only permitted in any given pasture for a specific number of days and then are moved to the next one to prevent overgrazing.

DONALD M. JONES

> *"I saw a potential conflict between wildlife and livestock grazing patterns and realized something needed to be done."*

Curtis is also attempting to use beavers as a range-management tool. Though trappers had at one time almost completely eliminated these animals from the Yellowstone area, they're starting to make a comeback. The Wyoming

DONALD M. JONES

You can already see the difference."

A visit to the ranch in the summer reveals how unusual Breteche Creek Ranch is among western ranches. Putting a 1990s spin on the traditional dude ranch, Breteche Creek provides visitors with a week of riding, hiking, bird watching, and fishing, along with a variety of educational programs in natural history and the arts. The ranch employs a roster of educators who give talks or informal workshops—often from the back of a horse—in subjects such as ornithology, wild bird rehabilitation, bear biology, geology, astronomy, photography, nature writing, painting, flint knapping, and the history of settlers and Native Americans in the Yellowstone area. Guests learn geology from high atop a mountain and hear from an astronomer about the stars while viewing them through a powerful telescope under a brilliant night sky. A wildlife biologist lectures on grizzly bears and shows budding naturalists how to distinguish grizzly bear from black bear tracks. Guests have a chance to discuss issues affecting small ranches while moving cattle on horseback and to learn horsemanship under the tutelage of a seasoned cowboy. The ranch naturalist is on call to lead nature hikes throughout the ranch and guided tours of Yellowstone National Park.

Although these summer programs are a sideline to the ranch's main year-round activities of raising cattle and horses, they are clearly important to the ranch's owner. A retired executive, Polk has a long-term interest in exposing people to nature and educating them about the value of wildlife and habitats. In the past, he helped start and fund several Outward Bound programs. In 1991 Polk, along with Chase Reynolds Ewald and several other colleagues, founded the Breteche Creek Foun-

Game and Fish Department released beavers on upper Breteche Creek in 1994 and 1995, and at least one pair is now established there. The beavers have already created a natural pond that will provide excellent habitat for other wildlife. "Over a period of years, as the creek and beaver pond fill with sediment, that creates meadows," says Curtis. "By creating new meadows, both livestock and wildlife benefit.

dation—a nonprofit organization that runs the entire educational program as a separate venture from the horse- and cattle-raising business at the ranch.

The results of the ranch's holistic management approach are already plain to see. According to a BLM rangeland management specialist who has been monitoring the land there for several years, the ranch's range is now in good to excellent condition. In contrast to overgrazed slopes in the arid West, wildflower diversity is staggering during June and July at Breteche Creek, and the numerous species of grasses bloom and set copious seed every summer. This healthy herbaceous cover is reflected in the abundant bird life found in every corner of the ranch.

Among the greatest benefits of the holistic approach and the educational programs at Breteche Creek is the example they set for other ranches, both in the area and throughout the West. Many local ranch families have lived and worked their ranches for several generations and depend on raising cattle to make a living. Such families cannot afford to experiment with alternative ranching methods until their risks and benefits are better understood. "It's important to have a place like Breteche Creek Ranch that's available for research and education," says Fitzpatrick, "a place that can afford to experiment with less environmentally destructive methods of raising livestock and test the effectiveness and consequences of these methods."

If the ranch successfully tests the notion that holistic rangeland management will not reduce its capacity for production of cattle and could actually boost the quality of the rangeland, it has the opportunity to win many converts to this approach. Because cattle can be extremely destructive to certain kinds of ecosystems, especially along tiny streams in arid areas, it is vital for the long-term health of the land that new approaches to cattle grazing be tested. The reason is that across vast areas of the American West, cattle ranches still supply some of the most important environments for biological diversity. If cattle grazing is deemed unsuitable as a commercially viable and environmentally acceptable land use, the alternative may be much, much worse.

"As you drive toward Yellowstone you see all this beautiful countryside, but increasingly it is broken up by wide swaths of new log cabins and summer ranch homes," says Fitzpatrick. "Development is the economic alternative to ranching in many areas of the West, because these are spectacular places to put homes."

One of the most colorful feathered residents at Breteche Creek Ranch is the Western Tanager (far left), which can be found in the tall aspen trees along creeks and draws. In the high country, near the timberline, ranch visitors regularly spot Blue Grouse (above).

DONALD M. JONES

In the effort to protect wild places as homes for eagles, falcons, thrashers, and sparrows—and even the occasional bear—we will depend on visionary places like Breteche Creek Ranch to test new models for keeping cattle a viable part of the picture. As bison and elk return in force each winter from the high country, it may be vital that we learn how they can best share these vast grazing lands with cattle, to ensure that the land will remain open for generations to come. ■

Peter Idema is the resident naturalist and assistant director of Breteche Creek Ranch.

Lab director John Fitzpatrick will be leading a three-day ornithology clinic at Breteche Creek Ranch during the session running July 14-18, 1997. For information on this and other educational programs at Breteche Creek Ranch, write to Box 596, Cody, Wyoming 82414, or call (307) 587-3844.

For the Love of Bird Photography

Photographs by Tom Vezo

At one time or another, most people dream of changing careers and following their own special path. Tom Vezo acted on his dream, giving up a lucrative printing business to roam the world, photographing birds.

"Warning: Bird photography can be highly addictive." Perhaps that message should be printed boldly on rolls of color slide film. Just ask Tom Vezo. Ten years ago, when he first began to dabble seriously in bird photography, Vezo owned a printing business in New York City. It wasn't long before he found himself spending more and more time photographing birds and less time working on his business.

"My print business was definitely competing with my passion for bird photography," says Vezo. "And being out in the field photographing birds kept winning out over commuting to Manhattan to deal with the grind of the corporate world."

Vezo's five-day work week gradually dwindled to four, and then in the last two years he managed to work only a three-day week, which did not include the five, two-week vacations he took each year to photograph birds. Finally, this past year, he made a complete break with his old life and sold his business.

"A pivotal point in my career came a couple of years ago when I went to Antarctica for a month," says Vezo. Not only was this trip the most exciting experience of his life, it also afforded him the opportunity to learn the ropes of the photography business from the other professional photographers he met on the trip. "When I got back to New York, I had a new

Vezo captured this dazzling backlit portrait of a "dancing" white phase Reddish Egret earlier this year while leading a photography tour in Florida.

BHL

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outlook on what I wanted to do with my life," he says. "I felt very comfortable in the photography business, and I knew I belonged there, despite the many words of caution from my friends. One side of me kept saying, 'Imagine traveling to all of these beautiful places, doing what I love most and making a living from it,' while another side of me said, 'How will I pay my mortgage and have enough money left over to buy food?'"

Vezo's practical side won out for two years as he worked hard at marketing his work. Now, he's a full-time freelance nature photographer and writer, and he travels the world seeking images of wildlife, especially birds. His photographs are being used by many magazines, book publishers, and calendar companies, and he is now being represented by four stock photo agencies—two in the United States, one in Germany, and one in Britain. In addition, Vezo has become a tour guide for aspiring nature photographers. Two years ago, Vezo and his partner Jim Roetzel launched a tour company called Photoguides. Together, they present photography workshop tours in bird-rich areas ranging from the arctic tundra of Churchill, Manitoba, to the balmy beaches of Sanibel Island, Florida.

"I love traveling to new places and being out in the field documenting the natural world," says Vezo. "Although I sometimes photograph mammals, landscapes, flowers, and other aspects of nature, I am still drawn most to my first love in photography . . . birds."

— *Tim Gallagher*

Although Tom Vezo spends a lot of time traveling far from his home on Long Island to photograph birds, he still takes many pictures of local birds. He spent one productive winter day at a wildlife refuge on the island photographing songbirds, such as this Tufted Titmouse (above left). Another time he set up a blind near the outflow of a Long Island pond, frequented by waterfowl. The result: this stunning image of a drake Canvasback (left).

But to photograph these courting King Penguins (above), Vezo had to travel all the way to South Georgia Island. This journey—part of a month-long excursion he took to Antarctica two years ago—represented a major turning point in his life and his career. From then on he knew that bird photography would be his life's work.

Bird photography is all about chance and serendipity. On the last day of a photography tour at New Mexico's famed Bosque del Apache, the skies turned dark in front of Vezo and it looked like he'd have to call it quits for the day. Suddenly the golden sun rose behind him, providing a wonderful contrast of color and light between the Sandhill Cranes and the mountains (above).

On another southwestern trip, this time in Texas, Vezo had some more good luck. It was a sweltering afternoon, shortly before dusk, and Vezo was set up next to a pond with his camera. Suddenly a group of Common Nighthawks (left) started skimming along the surface of the pond, apparently dipping for water, and he documented this rarely seen behavior.

This Roseate Spoonbill (above) was one of a flock of 20 that landed near Vezo in a pond at Ding Darling National Wildlife Refuge. It moved away from the rest of the flock, allowing Vezo to take this alluring, backlit portrait, showing the bird's pink, translucent wings stretched out against a dark background.

LANG ELLIOTT

Recognizing an Ovenbird's song sight unseen is just one pleasure enjoyed by "ear birders." To take your birding skills well beyond the beginner phase, or to become a serious student of bird sound, use an audio guide recommended by Streiffert and chances are you'll get results.

A SOUND EDUCATION

BY KRISTI G. STREIFFERT

Learning to identify birds by their songs will make you more effective as a birder—and as a conservationist.

It is not quite dawn, but from my sleeping bag I can almost hear the earth turning toward the sun. Far off, the song of the morning's first Ovenbird rings repeatedly from a distant tree. Then, a bit closer, a Northern Cardinal starts to chortle. Soon I'm surrounded by sound: a Ruffed Grouse drumming, White-throated Sparrows calling. I can identify at least a dozen birds without even opening my eyes. The earth rotates another notch; the sun hits my tent; I grab my binoculars and go.

Learning to identify birds by sound has enhanced my pleasure in the natural world immensely and has also improved my birding skills, taking me well beyond the beginner phase. But more important, my abilities as an "ear birder" have increased my value as a volunteer in bird conservation efforts.

It took several years of unfocused effort and one spring with the right tools to set me on the path to birdsong learning. If you leave it to chance, you can gradually learn the songs and calls of the birds that inhabit your yard or visit your feeders, but it takes years to go any further if you try to learn bird songs without the benefit of instructional aids. Have you ever tried to learn a new language? Spanish 101 students require teachers, textbooks, and class time to go beyond "tortilla" and "gracias." Visiting a Spanish-speaking country helps, too. Fortunately for students of bird song,

ART/SCIENCE STUDIO

MARIE READ

To learn birding basics, habitat preferences, and natural bird sounds (such as the call of the Marsh Wren, above), try Backyard Bird Walk *or* Marshland Bird Walk *from NatureSound Studio.*

the "other country" is right outside our doors, and an effective array of teaching aids has been developed to help us learn the language.

Toward Bird-sound Appreciation

For brand-new birders, audio guides from NatureSound Studio provide an excellent introduction to "ear birding." *Backyard Bird Walk* and *Marshland Bird Walk* combine bird sounds and informative facts that enable listeners to learn habitat and birding basics. Both guides pique people's interest and lead them to the next NatureSound Studio offerings: *Know Your Bird Sounds*—volume one: *Yard, Garden, and City Birds* and volume two: *Birds of the Countryside.* These audio tools excel by providing a repertoire for each species—territorial calls, flocking calls, contact calls, and more. Instead of a mere one or two songs, these recordings provide at least three (and up to six) sounds.

The Lab of Ornithology also has a number of excellent audio guides, all featuring recordings from the Library of Natural Sounds (LNS). The *Guide to Bird Sounds* (designed to accompany the National Geographic Society *Field Guide to the Birds of North America*) and the Peterson *Eastern/Central Bird Songs* and *Western Bird Songs* are all LNS productions and feature the vocalizations of a wide range of North American birds. In addition, the Lab's *Songs of the Warblers of North America,* by Donald J. Borror and Willam W. H. Gunn, is the best and most comprehensive audio guide available for learning warbler vocalizations.

As this issue went to press, a new audio guide—the *Stokes Field Guide to Bird Sounds: Eastern Region*—was due to be released, but a review copy was unavailable.

CD-ROM Guides

A number of new CD-ROM software programs are almost encyclopedias of birds, providing a vast array of habitat descriptions, visual identification tips, and other ornithological information on most North American bird species. Two of these are excellent introductions to birding: *North American Birds* by Peterson Multimedia Guides and the *National Audubon Society Interactive CD-ROM Guide to North American Birds.* These programs use music, video clips, and a wide array of photographs and illustrations to help beginning and intermediate birders learn more about both ornithology and specific bird species. Another CD-ROM guide, *Birds of North America* by Thayer Birding Software, is targeted specifically at avid birders and provides both basic and advanced features.

Though these CD-ROMs are not designed specifically to teach bird-sound identification, they do provide assistance to varying degrees. The Peterson guide has a short section on the importance of using bird sounds to identify birds (featuring a video of Roger Tory Peterson telling why learning bird sounds is important). It includes an auditory section for each species, but it does not provide any special help for learning bird songs.

The National Audubon Society guide also includes a recording of each species and a section on the importance of using bird song for identification in its "Library" section. The text points out the value of using flight calls to identify shorebirds: "Every shorebird native to North America . . . can be identified by notes alone." It would have been helpful, then, if the "Skill Builders" (quizzes) section had included shorebirds, but of the audio-identifier quizzes included, none covers shorebirds. Nevertheless, 22 sets of bird songs (with 12 songs in each set) will keep the bird-sound learner occupied for some time. The Skill Builders include "common bird songs" (three sets), "songs by type" (seven sets), "warblers" (four sets), "owls" (two sets), "sparrows, etc." (three sets), and "flycatchers" (three sets).

Thayer Birding Software provides even more help for students of bird song. The CD-ROM *Birds of North America* offers 115 quizzes, which can be used in sound-only mode to learn bird sounds. These quizzes include most large groupings of birds, such as sandpipers or *Empidonax* flycatchers; the other quizzes group birds by habitat or birding hot spot.

Another useful Thayer feature is the side-by-side comparison, which allows you to compare two birds with similar songs. In addition, the entire text of *The Birder's Handbook* by Paul R. Ehrlich, David S. Dobkin, and Darryl Wheye (which has many helpful tips on vocalizations) is included and hyperlinked so that you can jump from specific to general teaching on birdsong topics.

I found only one CD-ROM software package targeted specifically to learning bird sounds. Axia Software produces a series of teaching discs including *Know Your Common Bird Songs,* which uses a unique interface system. This product is extremely helpful for learning the basics of birdsong identification. Several multimedia presentations on topics such as "Why do birds sing?" and "How to use sound wave graphs" lead into side-by-side lists of birds. Each bird listing includes a song recording, mnemonic hint, several photographs, and more. Birds are grouped by region, song type, and so on. It's easy to customize and set up a series that will allow you to compare similar songs. This software would be perfect if it included the songs of all, or at least most, North American birds. It remains true to its mission of teaching "common" bird songs, however, and only includes 121 species.

Some users complain about the sounds produced by these CD-ROM programs—and indeed, because the songs tend to be computer generated, they are sometimes of significantly lower quality than recordings on audio cassettes and CDs. But I had no problem attract-

RESOURCE TOOLBOX FOR LEARNING BIRD SOUNDS

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NATIONAL GEOGRAPHIC SOCIETY
Library of Natural Sounds
Guide to
Bird Sounds
PETERSON FIELD GUIDES
WESTERN
Bird Songs
Cornell Laboratory of Ornithology-Interactive Audio

ART/SCIENCE STUDIO

AUDIO TAPES AND CDS

Backyard Bird Song by Richard K. Walton and Robert W. Lawson (Peterson Field Guides/Houghton Mifflin); cassettes $19.95

Backyard Bird Walk by Lang Elliott (NatureSound Studio); Distributed by Northword Press, Inc. (800) 336-5666; cassettes $12.95, CDs $15.95

Birding by Ear (Eastern/Central) by Richard K. Walton and Robert W. Lawson (Peterson Field Guides/Houghton Mifflin); cassettes $35.00, CDs $40.00

Birding by Ear (Western) by Richard K. Walton and Robert W. Lawson (Peterson Field Guides/Houghton Mifflin); cassettes $35.00; CDs $35.00

More Birding by Ear (Eastern/Central) by Richard K. Walton and Robert W. Lawson (Peterson Field Guides/Houghton Mifflin); cassettes $35.00, CDs $35.00

A Bird Song Tutor for Visually Handicapped Individuals by Lang Elliott (Cornell Laboratory of Ornithology); cassettes $19.95

Know Your Bird Sounds by Lang Elliott. Volume I: *Yard, Garden, and City Birds.* Volume II: *Birds of the Countryside.* (NatureSound Studio); Distributed by Northword Press, Inc. (800) 336-5666. Cassettes $12.95, CDs $16.95

Marshland Bird Walk by Lang Elliott (NatureSound Studio); Distributed by Northword Press, Inc. (800) 336-5666. Cassettes $12.95, CDs $16.95

Songs of the Warblers of North America by Donald J. Borror and William W.H. Gunn (Cornell Laboratory of Ornithology); cassettes $19.95

Eastern/Central Bird Songs by Cornell Laboratory of Ornithology/Interactive Audio (Peterson Field Guides/Houghton Mifflin); cassettes $25.00, CDs $40.00

Western Bird Songs by Cornell Laboratory of Ornithology/Interactive Audio (Peterson Field Guides/Houghton Mifflin); cassettes $35.00, CDs $40.00

Guide to Bird Sounds by Cornell Laboratory of Ornithology for use with the National Geographic Society *Field Guide to the Birds of North America*; cassettes $19.95, CDs $24.95

Stokes Field Guide to Bird Songs: Eastern Region by Lang Elliott with Donald and Lillian Stokes (Time-Warner Audio Books/Little, Brown and Company); (800) 759-0190; cassettes $29.98, CDs $29.98

BIRD SOUND COMPUTER SOFTWARE

AviSys Song (Perceptive Systems); used with audio CDs; for Windows. (800) 354-7755. $59.95

BirdSong Master (Micro Wizard); used with audio CDs; for Windows. (614) 846-1077; $75.00

COMPREHENSIVE CD-ROM BIRD GUIDES

Birds of North America (Thayer Birding Software); for Windows. (800) 865-2473. $65.00

National Audubon Society Interactive CD-ROM Guide to North American Birds (Knopf New Media); for Windows or Macintosh systems. $49.95

Know Your Common Bird Songs (Axia Multimedia) (800) 969-2942; $59.95

Peterson Multimedia Guides: North American Birds (Houghton Mifflin Interactive); for Windows. $69.95

Many of these products are available at the Crow's Nest Birding Shop. For information or to order call (607) 254-2400; FAX (607) 254-2415.

ing a Yellow Warbler outside my office window by playing the species' song on my computer. If you find the sound quality unacceptably poor, part of the problem might be in the configurations of your computer system. The producers of most of these products will provide advice to help users "tweak" their systems for better sound quality.

Choosing the Best Song-learning Tools

As any carpenter will tell you, though tools might be versatile, the best tool for a job is task-specific. The CD-ROM bird guides listed on page 25 can be very helpful for learning to identify bird sounds, but the best support for the task at hand, especially for beginners, targets bird-sound learning only. Birders who are already familiar with the favored habitats, appearance, and basic natural history of birds but lack birdsong identification skills will enhance their skills exponentially with the help of the *Birding by Ear* tapes or CDs (no computer needed) by Richard K. Walton and Robert W. Lawson. These recordings—which come in both eastern and western versions—are invaluable because they teach you not just specific bird songs but how to learn bird songs on your own.

Get the best tool for the job. You'll find the Birding by Ear *audio guides invaluable for demonstrating how to learn bird songs (such as the bubbling call of the Bobolink, above) on your own. Or try "BirdSong Master" or "Avisys Song" software to isolate and test yourself on those songs you need to learn.*

Techniques for distinguishing and remembering songs are interwoven with a format that provides a basic vocabulary of bird songs. If you learn the hundred or so bird songs on the tapes, your attention will immediately focus on any unusual, unrecognized song in the field. The ability to filter out the common from the unusual or rare birds without even raising your binoculars definitely enhances your effectiveness in the field.

Diagnostic tools suggested by Walton and Lawson include "pairing," phonetics, comparison, and mnemonics. The tapes separate the birds into several "learning groups," including "trillers," "mimic-like repeaters," "high pitchers," and others.

I've found the best way to use these tapes is in my car. At home I'm too easily distracted. But while commuting or running around town on errands, I play the tapes over and over.

One bird-sound teaching technique that doesn't even require a tape player may be one of the best. Go birding with people who know their bird sounds. Each trip will reward you with at least one new song, and if you follow up with more time in the field on your own, you'll find your repertoire rapidly increasing.

For Advanced Bird-sound Learners

A few years ago, after my apprenticeship with the *Birding by Ear* series, I signed up to cover a route for the North American Breeding Bird Survey. When I started planning, I realized I didn't know the songs of several of the birds that would be present. Because identifying each breeding bird in an area by song is a prerequisite for covering an area, I started a crash course. I had a CD of eastern bird songs, so I attempted to "cram" by making a cassette tape of the songs of my targeted birds, but it was an exercise in frustration. If only I could quickly isolate the needed songs and stage them in a logical sequence, I thought. In the end, I didn't have enough time to learn the necessary songs, and I withdrew from the route.

If only I'd had the specific tool for the job at hand. I do now. Two innovative computer programs—*BirdSong Master* and *Avisys Song*—are making the bird-sound-learning process smoother for many birders. These software programs were designed to be used with existing CD audio guides such as Peterson's *Eastern/Central Bird Songs* and *Western Bird Songs* and the National Geographic Society *Guide to Bird Sounds.* You can "stage" a set of birds that you want to learn and play it over and over until you have the set memorized. Then you can quiz yourself on these sets. The screens are set up so that all of your learning is done in the most efficient manner possible.

Conservation Connections

Birders who take the time to learn the language of bird sound have a world of conservation opportunities open to them. Christmas Bird Counts, Breeding Bird Surveys, and the Lab's Birds in Forested Landscapes project are just a few of the programs that are enhanced immeasurably by birders who pursue an auditory education. If I'd had the foresight to start earlier in my efforts to learn some of the warbler and sparrow songs I was apt to hear on my Breeding Bird Survey, I'd have been another useful soldier in the volunteer army of birders.

This spring, I'll be ready. ■

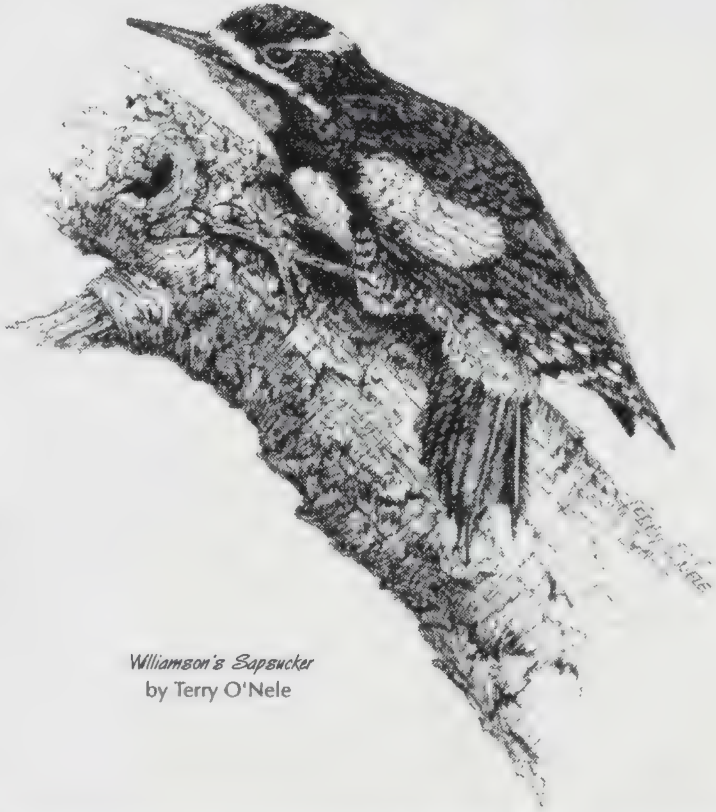
Kristi G. Streiffert is a freelance writer based in Coulee Dam, Washington. She frequently writes for this magazine.

MARIE READ

A Birder's Guide to Colorado

by Harold Holt

ABA's newest comprehensive guide, covering the entire state of Colorado and featuring a wide variety of loop trips accompanied by over 80 big new maps. The Colorado guide gives special attention to birding destinations such as Rocky Mountain National Park, Pawnee National Grasslands, The Grand Junction Area, and the reservoirs along the South Platte and Arkansas Rivers on the Eastern Plains.



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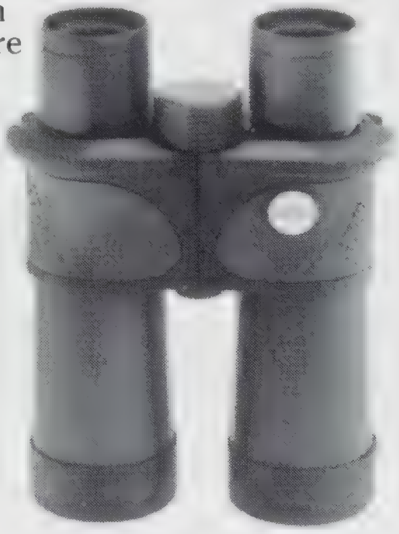

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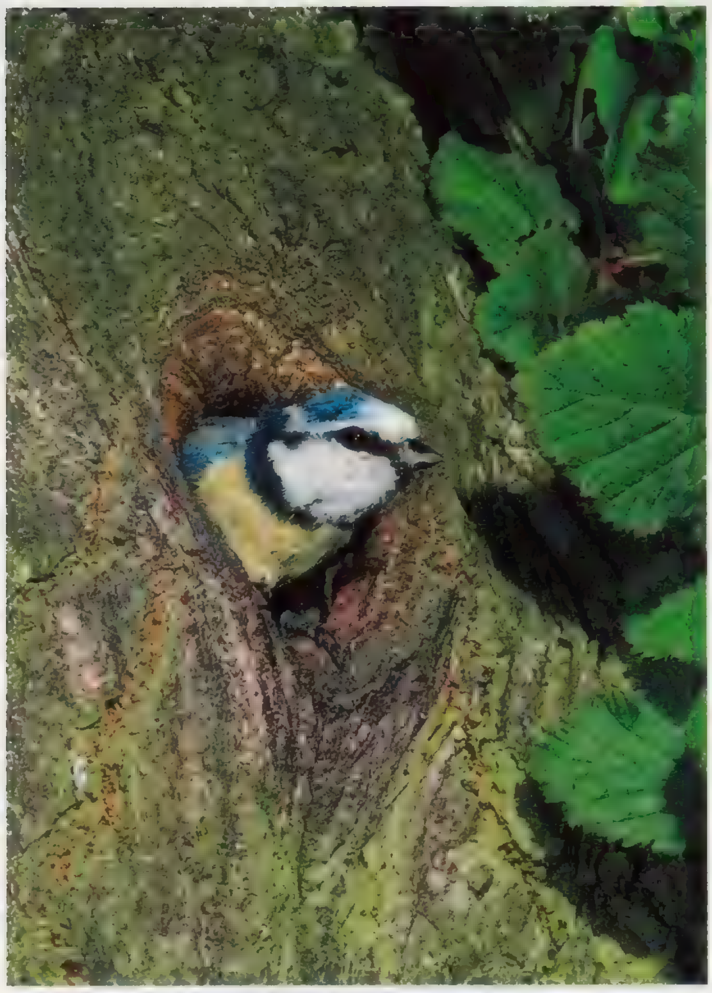
MATING GAMES

BY ANDRÉ A. DHONDT

In Blue Tit nests across Europe, it's the female who rules the roost when it comes to the particulars of the mating game.

As a population biologist, I have always been fascinated by differences between individuals. This variation is what makes biology so interesting. Central to all my research is the question, what are the causes and effects of individual differences? To find the answers to such a question, I mark and follow individual birds throughout their lives.



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When studying European titmice in 1978, I discovered, by accident I must admit, that some Blue Tits are polygynous. Today, we know that 5 to 15 percent of male Blue Tits have two partners, and a small number of males are paired to three females with overlapping nesting cycles. I also observed, when prying into the birds' private lives, that while a female was laying eggs, she would sometimes sneak away and visit a neighboring male on his territory.

Why do females do that? Why are some males polygynous but not others? Why do some females visit neighboring males and copulate with them? Why is the mating system of Blue Tits so variable and complex? If both partners survive until the next breeding season, do they breed together again? In this article, I have formulated answers to these questions with a strong bias toward the female perspective.

Choices to Make

To reproduce, a female needs to find a male and a territory. To maximize her reproductive success, she needs to select the male and the territory that will result in the largest number of offspring surviving to breed. What kind of choices can she make? Before the breeding season, unmated females have two choices: to find a territory with an unmated male and be monogamous or to select a territory where the male is already mated and become a secondary wife in a polygynous pairing. During the mated female's breeding season, her two choices are either to copulate only with her social partner or to copulate with other males as well. Between breeding seasons, females must also make choices. They can choose to stay on their own territory or move to another one. And, if their previous male partner survives, the females can choose to remain faithful or divorce.

The Blue Tit is a small passerine bird weighing about 11 grams that prefers to nest in mature, deciduous woodland. Being a secondary cavity nester—using natural cavities or nest holes excavated by other birds—it readily uses nest boxes. In Belgium, Blue Tits lay an average clutch of 11 eggs in late April, and approximately 15 percent of the young that fledge survive to breed. The chances of breeding adults surviving until the next breeding season are between 35 and 50 percent, depending on the site, year, and age of the adult.

Polygynous males in their lifetime raise more

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young that will survive to breed, implying that polygyny is a strategy all males should pursue. But what should females do? What are the options for a female Blue Tit seeking a partner?

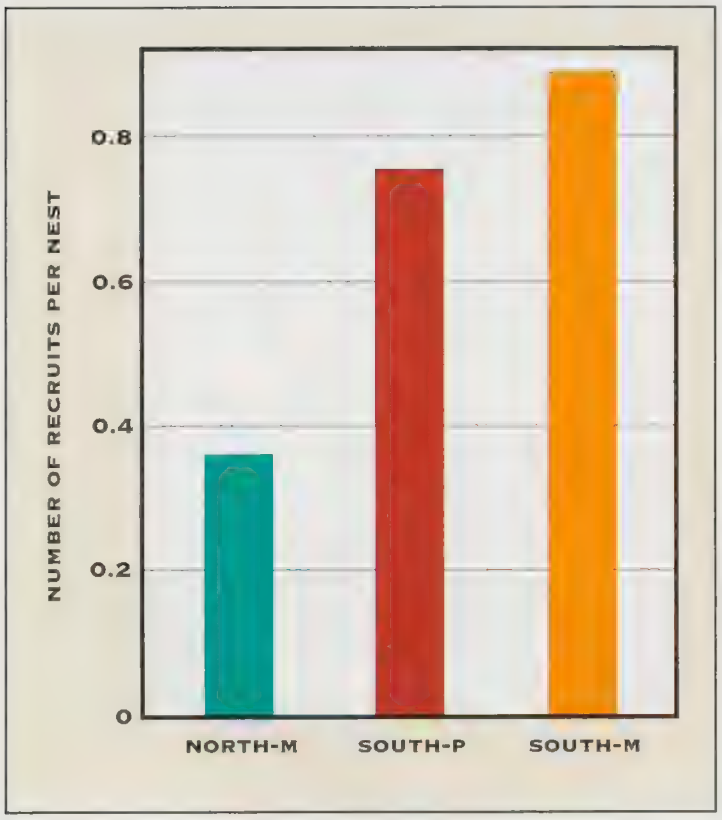
Let us assume that some of the males are already paired, and some are unmated. In our study sites with optimal breeding habitat, each male defends a single territory of about half a hectare (almost one-and-a-quarter acres). As soon as a pair is formed, the male and female stay together on the territory most of the day. A female who is looking for a partner knows which males are paired and which are unpaired. In fact, when a new female approaches an already-mated male, she will usually be attacked and chased away by the resident female. If a female Blue Tit chooses to join an already-mated male, she knows she will become part of his harem. One hypothesis proposed to explain the choice a female should make in this situation is the *polygyny-threshold model.* This model assumes that differences between “breeding situations” (the combination of males and territories) exist and that females can judge which choice will be most advantageous, or simply which breeding situation should yield the highest success. Let us also assume that females arrive one by one. When the first female arrives, all males are still unpaired, and the female should obviously select the best male and territory. Other females should select unmated males as partners in the order of their quality, because a monogamous female will receive full help from her partner in raising their young.

If the quality of the territories varies greatly, some females may be better off receiving only half of the help from a male on a high-quality territory than they would be receiving full help from a male on a poor territory. The polygyny-threshold model predicts that if such a situation arises, a female should prefer a polygynous mating to a monogamous one.

What do female Blue Tits do in practice? As the graph on page 30 shows, polygyny only occurred in the southern (better) half of the plot: when I calculated the average number of young surviving to breed per monogamous pair in the different parts of the study plot as a measure of habitat quality, I found that in the southern half, the average number was 1.0 recruits per breeding pair per year; in the northern (poorer) half, the average number

It’s a complex world for female Blue Tits in Europe. Should she choose an unpaired mate? Should she choose an already-mated male and become part of his harem? Her goal, as always, is to produce the most offspring that will survive to breed. How do these birds know which male and which territory are the best choices?

was only 0.4 recruits per breeding pair. Bigamous females in the southern (better) half of the plot recruited on average 0.78 recruits per breeding season. This is fewer than neighboring monogamous females but clearly more than they would have raised if they had bred as monogamous females on the poorer half of the plot.



Do female Blue Tits favor polygynous matings to monogamous ones? As shown above, the author discovered that polygyny only occurred in the southern (better) half of the plot tested. And, at 0.78 recruits per breeding season for bigamous females versus 0.4 recruits per breeding season for monogamous females in the northern (poorer) half of the plot, the results clearly show that polygynous females on the better half of the plot raised more young than did monogamous females on the poorer half of the plot. Monogamous females on the better half of the plot raised the most young—1.0 recruits per breeding season.

The answer here is clear: female Blue Tits can evaluate the habitat quality quite precisely and make the correct choice. They only become polygynous on high-quality territories. This also implies that females choose the territory first and the male second.

Not all females *can,* however, become polygynous, because the resident females are usually very aggressive toward prospecting females. Most likely this is because males with two wives will preferentially feed the young in the nest that hatches earliest. If a secondary female succeeds in hatching her young first, she will become the male's preferential partner and will get his help in raising her young. Thus, if a mated female can prevent a second female from joining her partner for a few days longer, the potential cost for her is less. Not all females *want* to become polygynous, because most likely, females evaluate both the quality of the territory and the quality of the male.

To summarize, we can draw three conclusions. First, polygyny is advantageous for male Blue Tits: by becoming polygynous more of their genetic material is passed on to future generations. Second, females who choose to become polygynous do better than females who breed with males on poorer territories. Finally, the data also suggest that females not only select the better territories but also the better males for a polygynous mating.

Another question is, once a female has chosen a partner, should she be faithful or not? This question is particularly interesting in combination with the previous problem of monogamy or polygyny. We concluded that polygyny is advantageous to the male, because he will raise more young. If, however, some of these young were fathered by another male, he could lose this advantage.

What can male birds do to safeguard paternity? If we look at birds' behavior during the breeding season, we can see that a few days before his partner starts laying eggs, the male changes his behavior: he guards the female while she is fertile to make it more difficult for other males to copulate with her. This so-called mate-guarding behavior has been observed in many species. If a male is polygynous, however, and both of his wives are fertile at the same time, he has a problem: he cannot guard them both unless they stay together. But females are aggressive toward each other and will not stay together.

Monogamous males are quite effective at guarding their mates, and during the fertile period they spend most of the day close to their wives. Primary wives of bigamous males are still guarded relatively well, but secondary wives are not well guarded at all. It is, therefore, quite possible that secondary wives especially would copulate with strange males, if they want to; as a result, the male would be cuckolded and have to raise the young he had not fathered. Perhaps that is why bigamous males feed the young in the second nest less frequently.

How can we determine if this is really the case? It is not enough to observe copulations, because not all copulations lead to fertilizations. Instead, we must use DNA fingerprinting to determine whether a Blue Tit pair has any extra-pair offspring. If the nests do contain extra-pair young, we should specifically compare monogamous to polygynous males: expecting that because monogamous males guard their mates more closely, polygynous males would be the ones who are cuckolded.

DNA fingerprinting was only developed in 1985, but it has already revolutionized our insight into bird behavior. The technique was developed for humans but can be used for any species of animal or plant. DNA is the hereditary material or "genetic code" that is present in the nucleus of a cell, half of which is inherited from each parent.

The DNA fingerprinting technique works as follows: after trapping a bird, you take a drop of blood; the DNA is extracted, purified, and "cut" into small fragments using enzymes, and a very small amount of DNA is then put onto a gel, where it is hybridized with a radioactively labeled probe and exposed to film.

If we look at the genetic fingerprint of a young bird, each dark band, which identifies a little piece of DNA, matches one in either the father or the mother. In fact, half of the bands come from each parent. When the male at the nest has only 20 percent of the bands in common with the young, we know he cannot be the real father. This technique allows us to exclude paternity.

Geert Verheyen, a graduate student in my lab, developed special probes to identify extra-pair Blue Tit young more easily. What's especially important about these probes is that they allow us to assign paternity: we can be certain that one male rather than another is the real father. These so-called single-locus probes show a different pattern: each bird has only two bands (alleles); one of these is passed on to each offspring. An offspring also has two bands: one from each parent.

Figures of Interest

Extra-pair young were observed in 36 percent of the nests studied and in 11 percent of the young; in nests that contained at least one extra-pair young, 39 percent of the young were extra pair (two-thirds of the nests contained no extra-pair young.)

Now, in which nests did more extra-pair young occur? In the monogamous or in the polygynous nests? Remember that monogamous males guard their partners more intensely than polygynous males, and that secondary wives are not very well guarded at all. So if guarding works, extra-pair young should be especially common in nests of secondary females. The results, however, are precisely the opposite.

Secondary females have few extra-pair young. The proportion of primary females and monogamous females with extra-pair young is higher. So if mate-guarding does help, it is certainly not very effective.

How can we understand this result? Remember the data suggested that polygynous males were better males than monogamous males. Could it be true that polygynous males would not need to guard their mates as much, because they are of better quality and females would remain faithful to them anyway?

To answer that question we need information on bird behavior. Sometimes a bird leaves its territory. Male visits to neighboring territories increased somewhat toward the fertile periods of their partners, but this increase was not statistically significant. Females, however, doubled their visits to neighbors when they were fertile, compared to the period before that.

My second Belgian assistant, Bart Kempenaers, in the course of his Ph.D. research, observed that when females were fertile, both within-pair copulations and a few extra-pair copulations were observed: 7 out of 71 (or 10 percent) observed copulations were extra pair. But do all females visit neighbors when they are fertile?

If we look at this behavior in more detail, we find very pronounced asymmetries in the system: some males receive very few visits, while others are visited by most neighboring females. In addition, a clear inverse relationship between movements in and out existed: females paired to "attractive" males rarely visited neighbors, whereas females paired to "unattractive" males frequently visited neighbors. Thus, we can conclude that fertile females clearly select the better males among their neighbors, and fertile females select males who are better than their partners, if better males are available. We also noted that both the partner and the neighboring females agree on how attractive each male is.

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In which nests did more extra-pair young occur? Given that monogamous males guard their mates more often than do polygynous males, extra-pair young should occur most often in nests of secondary females. The results, however, are precisely the opposite.

What is so special about attractive males? They have significantly longer legs, but, of greater note, attractive males have higher reproductive successes. Not surprisingly, they get many visits, have few extra-pair young in their own nests, and contribute extra-pair young to their neighbors' nests.

Now, remember that polygynous males also had higher reproductive success and are, therefore, of better quality. It comes as no surprise, then, that polygynous males would have fewer extra-pair young in their nests than monogamous males.

With the Blue Tit DNA probes developed in my lab in Belgium, we were able to identify the actual fathers of the extra-pair young. One of the polygynous males had young in his own two nests, plus nine extra-pair young in four different neighboring nests. These results show that Blue Tit reproductive behavior is surprisingly complex in terms of monogamy and polygyny and with regard to paternity.

DNA fingerprinting, a truly sophisticated technique, has helped us to unravel the complexities in a way we could not have done otherwise. But only careful, patient, and detailed field work, *watching which bird did what with whom and when,* has helped us to understand the complexity of the pattern.

With the Blue Tit DNA probes developed by Geert Verheyen, scientists can now identify the actual fathers of extra-pair young more easily. Above, Marleen Van den Broeck prepares Blue Tit DNA to determine which Blue Tit is the father—the mother's mate or a neighboring male?

FRANK ADRIAENSEN

Without a doubt, the key to the system is female behavior.

To Divorce or Not to Divorce?

After the breeding season is over, tits molt and prepare for winter. Then they have to survive until the next breeding season. The following spring, a female must make this choice: if her former partner survives, should she remain faithful or should she divorce? We recently analyzed our data and found that these choices vary widely between different populations: in urban populations only about 5 percent of the surviving pairs divorced, whereas in the woodland population, 85 percent divorced. Why do some birds divorce and some not, and why does this very large difference exist between populations?

When asking why Blue Tits divorce, we found that in the year preceding a divorce, the divorcing pairs had laid their eggs relatively late and had raised fewer young compared to birds that remained together for another year. As a result, birds that had been relatively unsuccessful were more likely to divorce. After a divorce, females, but not males, improved their breeding success, compared to birds that remained faithful. This shows that divorce was adaptive for females and not for males, suggesting that females left their partners, rather than the other way around. Not surprisingly, older females were less likely to divorce, while the divorce rate did not change with male age.

In all habitats, the benefits of a divorce were the same to the females. To improve her situation by a divorce, a female must find a better partner, territory, or both. In searching for this improved situation, females may incur a cost: in urban habitats, where food is plentiful in winter, both male and female tits tend to remain on their territories throughout winter. A female investigating whether divorce is the best option will need to visit neighboring territories and males one by one, and while she is doing that, other females might come and replace her. The cost to search for a new partner is relatively high. In woodland habitats, however, birds form large flocks in winter that wander over the territories of many pairs. Birds in these flocks establish dominance hierarchies. In these populations, the cost of searching for a new partner and of investigating the quality of other territories is low: the females can rank males by their dominance positions in the flock and inspect cavities and food conditions as they travel through other territories. In these habitats the cost of searching for a new mate is low, and divorces are much more frequent.

It's Her Call

Simply put, females guide the mating habits of Blue Tits. In the females' quest to maximize the number and the quality of their offspring, they make a series of decisions each year. Before the breeding season, females search for the best breeding territory. If becoming bigamous with a high-quality male on a high-quality territory will enable a female Blue Tit to produce more offspring who will survive to breed, she will attempt to become bigamous. If the quality of neighboring males is higher than that of a female's own partner, she will seek extra-pair copulations leading to extra-pair young. And if by divorcing, a female can improve her breeding success the following year, she will divorce. ■

André A. Dhondt is director of the Lab's Bird Population Studies program and the Edwin H. Morgens Professor of Ornithology at Cornell University.

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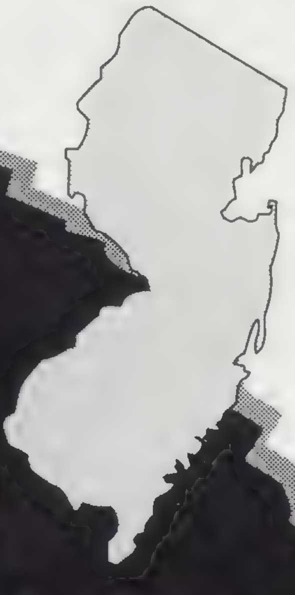

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BIRDS IN FLIGHT

Text and photograph by Tim Gallagher

The ultimate challenge for bird photographers.

Nothing's quite like photographing birds in flight. To me it represents the essence of bird photography, because the ability of birds to fly is one of the most amazing and fascinating things about them. Even as a teenager, in my earliest efforts at bird photography, I always wanted to take pictures of flying birds. Of course, my first attempts were abysmal. My camera—an old Argus 35mm range-finder camera I bought used at a pawnshop—was hopelessly inadequate for the task. It didn't have interchangeable lenses, so using a telephoto lens was not an option, even if I could have afforded one. I knew that to get a sufficiently large image of a songbird it would have to fly past within a couple of feet of my camera—something that no self-respecting bird would do if I were sitting there holding the camera.

To solve that problem, I set up my camera on a tripod near a bird feeder, using a long shutter release cable to trigger my camera remotely. I was hoping I could snap a shot of any bird that flew past the front of my camera en route to the feeder. Of course, this was long before the advent of autofocus technology and even before photographers started routinely using electronic beams that trigger the camera automatically whenever something passes through the beam. I was relying on reflexes and luck alone. Unfortunately, I wasn't very quick or lucky in those first attempts at flight photography. I think the best I got was a couple of shots of birds' tails as they were passing out of the frame, but not anything at all usable as a bird image. I had to give up my dreams of photographing flying birds for a few years until I could get some adequate equipment.

Of course, even with the best, most up-to-date equipment currently available, photographing birds in flight is still a tough endeavor. Many of the images turn out too small, too dark, too light, too blurred from motion, or out of focus. Sometimes you even miss the bird entirely. So why waste film trying to photograph flying birds? Because when it all comes together, the images you create are unlike anything else in the entire field of nature photography. But you will definitely use up a lot of film.

The first step in preparing to photograph flying birds is to make sure you have the right equipment. I always recommend using a 35mm single-lens-reflex (SLR) camera system. The film is less expensive than that used in larger format cameras, the equipment tends to weigh less, and most brands of SLRs accept a wide range of interchangeable lenses, which makes them extremely versatile. A motordrive is a virtual necessity for flight photography, though I advise you to set it on single-frame firing. The continuous firing mode will eat up a 36-exposure roll of film in seconds, which can get expensive quickly.

To take frame-filling pictures of birds in flight, you'll need a telephoto lens in the 300mm to 400mm range. (A 300mm lens magnifies the image six times, a 400mm eight times.) A less-powerful lens may be adequate for photographing large flocks of birds, but to take really striking flight shots of individual or small groups of birds requires more magnification power. Internal-focus lenses are best because they focus quickly, usually requiring fewer turns to travel from close focus to infinity.

It takes practice to become proficient at photographing moving objects with a telephoto lens. Though they're excellent for magnifying a bird's image, these lenses also magnify the effects of any camera movement, so they need to be held very steady. And telephoto lenses have a narrow depth of field (area in sharp focus), so it's critical to focus accurately. To get a first-rate flight shot of a bird, you need to be able to do several difficult things at the same time. You have to find and follow a fast-flying bird in your viewfinder, hold the camera steady, bring the bird's image into sharp focus, and press the shutter release at the perfect instant.

The most widely used technique for photographing moving objects is called panning. Basically, you point your lens at an incoming object and follow it as it goes past, swinging the camera smoothly in a horizontal arc. You can pan by mounting your camera on a tripod, monopod, or shoulder mount, or even by hand-holding your camera without a support of any kind. Although a tripod is infinitely steadier than anything else, it does not provide enough mobility for some situations. Tripods work well for photographing large, slow-flying birds, such as pelicans and herons, which tend to fly in a predictably straight course. I've used a fluid-head tripod with a panning arm and also a tripod with a ball-joint head for panning. The panning arm is extremely useful for some flight shots, but I use a ball-joint head more often because it's so versatile for all-around bird photography.

When I lived on the coast of Southern California, I would often set up a camera on a tripod next to a channel where Brown Pelicans flew past frequently. Whenever a bird approached, I would set the vertical adjustment on the tripod head up or down to match the anticipated level of the bird's flight path and then start focusing. I'd try to keep the bird in sharp focus the entire time as I moved the camera to keep the bird's image in my viewfinder, snapping pictures whenever I saw a desirable image. This technique is called "follow focusing." Using a tripod and panning along with a bird as it flies past can create a nice effect—a sharp image of the bird's head and body, with blurred wings and background to accentuate speed—but you must be able to pan smoothly.

Birds that move unpredictably in flight, twisting and darting here and there, are difficult to photograph using a tripod. To be effective, you might need to hand-hold your camera or use a shoulder mount. It's a good idea to practice flight photography at first without having film in your camera. Sit in your front yard and try panning along with passing cars. Then, go to a park with some friends and try to follow a Frisbee with your camera as they toss it back and forth. Later, move on to some easy bird subjects, such as ducks, pigeons, and gulls. In addition to panning, be sure to practice focusing and pressing the shutter release.

Another technique bird photographers use is "prefocusing"—that is, focusing your camera on a place where you expect a bird to pass by closely. As the bird approaches the spot, you follow it in your viewfinder until it reaches the point of focus and then take the picture. This works well on birds flying predictable paths to their nests, to a favorite branch, or to a bird feeder. You can also focus on a perched bird and snap your shutter as it takes off—a sneaky way to get a sharply focused flight shot.

One way to solve, or at least ease, the problem of keeping a flying bird in focus is to buy autofocus equipment. I was very resistant to autofocus when it first came out and for several years thereafter, but I must admit that it has improved immensely. Both Nikon and Canon (and probably other manufacturers) now have excellent autofocus systems that really increase the number of "keepers" you can get photographing birds in flight. Flight photography has probably always been the most wasteful branch of bird photography, considering the amount of film you have to shoot to get a decent number of acceptable images. I used to think that if one in ten of the flight shots I took was a sharp, usable image, I was doing well. Now, using autofocus, your success ratio (at least in terms of images in sharp focus) can go well above 50 percent with practice.

If you already have a large amount of manual-focus equipment, however, you may not want to replace your entire system, unless you're planning on making flight photography your specialty. Manual-focus equipment is excellent for most bird photography, and it's possible to take excellent flight shots using it. It's the only equipment photographers had for decades, and they produced some amazing images with it.

Motion-blurring is another common problem when you're photographing flying birds. One remedy is to use a fast shutter speed. A shutter speed of 1/1,000 of a second will eliminate most camera movement problems, even if you're using a 400mm lens. In most situations, however, you'll need a fast film to get a good exposure at 1/1,000 of second. I always use slide film because publishers prefer the reproduction quality that transparencies provide, but I don't like the grainy look of films rated ISO 200 or higher. I prefer to use films such as Fujichrome 100 or Kodak Lumiere—both of which are rated at ISO 100—and have them "pushed" (or overdeveloped) one stop during processing, effectively boosting their film speed to ISO 200. You can have your film pushed even further than this, but the image quality begins to suffer after it's pushed two or three stops. If you do plan to push a roll of ISO 100 film by, say, one stop, be sure to set your camera manually at ISO 200 or your entire roll will be overexposed.

The built-in exposure meters in most cameras are fine for average lighting conditions, but when you have a dark bird flying across a brightly lit sky you can have problems. In this situation, the intensity of the background light can overpower your camera's exposure meter and you end up with a dark silhouette of a bird against a perfectly exposed sky. You can compensate somewhat by taking a meter reading of something with a similar color and reflective quality as the bird

The author photographed this handsome adult American Avocet with a manual-focus, 400mm Nikon lens, using the "follow focus" technique.

you want to photograph—the ground, some foliage—and set the exposure manually. But if you have a camera with a matrix-metering system, it's unnecessary to override the automatic exposure system. Matrix-metering systems take into account the lighting requirements of the foreground subjects and the background and balance the light accordingly.

Finding the best location in your area to photograph flying birds will definitely make things easier for you. Places like the channel I described earlier, where Brown Pelicans fly past at close range all day, are ideal for flight photography. Other good places are spillways, where various gulls, terns, and perhaps even Bald Eagles and Ospreys come to feed on fish. Look for any situation that concentrates birds in a small area.

Breeding season can open up some great opportunities for photographing birds flying to and from their nests. I don't like to do anything that will unduly bother nesting birds, but sometimes you can take excellent flight pictures of parent birds without even getting close to their nests. I photographed the adult American Avocet pictured on page 35 at a wildlife sanctuary without using a blind and without ever leaving the nature trail. I had noticed that the bird, which had a nest nearby, would fly over to investigate every time someone walked past. It didn't seem unduly disturbed and never let out a distress call. I sat down quietly and snapped a picture of the bird every time it flew past to look at a passerby.

Another way to make flight photography easier is to look for the moments in flight when a bird is moving the least. For example, when a pelican stops flapping its wings and starts gliding, or a tern hovers above a fish-filled channel, or a duck backpaddles to slow down as it comes in for a landing. These are the moments to look for and to take advantage of whenever you can.

Though photographing flying birds can be a lot of trouble and does use up a lot of film, it will all seem worth it when you capture a great image of a bird moving freely through its element—the open sky. ■

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Critics' Corner

BIGGER IS BETTER?

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Suggested Retail Price: $1,845

If you're thinking of buying some Zeiss 10x56 B binoculars, I have good news and bad news. First the good news: I have never in all my years of birding looked through any binoculars with the brightness, image clarity, and field of view of these big Zeisses. Even while wearing eyeglasses, the broad field of view and bright image are undiminished. They're absolutely superb. I already own a pair of 7x42 Zeiss binoculars, and I've always been impressed by their brightness as well as the wide field of view. Whenever I used 10x binoculars in the past I always noticed the much narrower field of view at the higher power, especially while looking through eyeglasses. These new 10x56 binoculars aren't like that at all. They provide an image every bit as big and bright as my 7x42s, but they also give me increased magnification power, which comes in very handy when you're looking for fine details in the plumage of a bird high in the canopy of a tropical rainforest. The standard Zeiss 10x40 binoculars are excellent, but these 10x56s are an order of magnitude better in terms of brightness and field of view.

Now for the bad news: they weigh 1,426 grams—that's more than three pounds. Though this is the only drawback I could find with these binoculars, it is a significant one. After a couple of hours of lugging these things around in the field, you feel like you've had a brick tied around your neck all day. They're great for carrying around in your car, but if you have to go hiking, they get heavy pretty fast. But, gosh, they're beautiful to look through. Every time I took these binoculars birding with me, I'd start thinking, these are just too big, too heavy—and then I'd raise them to my eyes and think: maybe. . . .

A couple of weeks ago in Costa Rica I met a German birder who was carrying a pair of these binoculars. I asked him what he thought of them, and he replied, "Wonderful view . . . very heavy." That says it all. The question is, how much weight are you willing to carry to have a truly spectacular view? I'm not sure of the answer myself.

—Kevin McGowan

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BINOCULAR REALITY

By Pete Dunne

I just opened today's mail—the bulk of which were third-class invitations targeting my concern for the environment. One told me that unless I acted now, the *blank, blank* was doomed. Another let me know that membership guaranteed me a day pack. A third was from a bank touting that a portion of any transaction made with their Visa card would help birds.

Now, I'm not saying that many environmental organizations are not worthy of your support. Or that financial institutions don't want to save the planet. Or that I want to cut the U.S. Postal Service out of much-needed revenue. I'm just saying that if safeguarding the planet seems important, I've got another idea.

Give someone you know a pair of binoculars. Make the world intimate and make it real.

The problem is estrangement. We, as members of modern society, have become divorced from nature. We get up in the closeted confines of our houses, drive to work in climate-controlled vehicles, spend 8 to 10 hours cooped up in an artificial workplace, drive home, turn on the tube, go to bed.

On weekends we cut the lawn (a habitat that's about as natural as a wheat field) or go to the mall (whose common area is an artificial vestige of the natural habitat that used to be there).

No birds. No forests. No excitement. No intimacy. Nothing but insular routine.

Cut through the routine. Give someone the optical bridge that will link them to the natural world. GIVE SOMEONE A PAIR OF . . .

Here is my theory. Here's why I think binoculars vault the barriers erected by the most suburb-deadened mind, opening a portal to the natural world. We (meaning everyone) start life as bundles of neural receptors linked to the outside world by sensory organs—ears, nose, and particularly eyes. As we're lying there in the crib, the whole universe is crashing in on our awareness: sound, light, color, movement. It's incredible. It's overwhelming. It's WOW.

To keep all this WOW from overloading the system we sleep a lot—but in between naps we integrate the world into a cognitive framework, a sort of sensory blueprint to the universe. In time, everything falls into place: distance, morning light, the color red, wet diapers, Mom, the treachery of stairs, sky, school buses, mortgages. It stops being overwhelming. In fact, it all becomes routine.

Then, one day while you're cutting the lawn, someone hands you a pair of binoculars. You raise them to your eyes . . . and this magic instrument cuts right through your cognitive framework, blowing you right back to the crib, right back to a brain stem.

WOW! You start panning around. Looking at things for the first time again. Rock . . . tree . . . toolshed ("huh," you think, "toolshed needs paint"). Then something catches your eye, something animate, something alive. You bring the binoculars to bear . . . and *gasp*.

It's so beautiful, you think. It's so alive. Look how it walks. Look how it stops and cocks its head. Look how it drives its bill into the lawn and tugs and tugs and tugs at that pink, pink worm.

Why, you wonder, have I never noticed anything so wonderful before? Because you never looked at a robin through binoculars before. That's why.

WOW. And WOW is very alluring. WOW is very addictive. Once you get a taste of it, once is not enough. If binoculars give robins a cerebral punch, imagine what will happen to the optically opened mind when those binoculars fall upon a Blue Jay . . . a House Finch . . . an iridescent starling . . .

A CARDINAL! Red and crested, with beady black eyes. OH WOW!

Once the birds of the backyard blow holes through your preconceptions, why, you have to start going afield—to parks and neighborhood woodlots, to sanctuaries and refuges and High Island and Panama, to an intimacy with wetlands and rain forests and migrant traps—to see Green-winged Teal and Prothonotary Warblers and Resplendent Quetzals.

Incidentally, you can give people a bird feeder and give them a taste of WOW. But a bird feeder isn't going to get them to Peru. It isn't going to get them a quetzal. It isn't going to save much more than the corner hedge.

Saving planets beats saving hedges. Buy them binoculars. Once people become intimate with nature, they become protective of it. If enough people become protective, environmentalists will constitute a majority.

When this happens the *blank, blank* won't be doomed. People will don backpacks and take to the woods (instead of the malls), using their bank cards to shop by mail, saving land that would otherwise be transformed into shopping centers.

WOW! ■

ILLUSTRATION BY JEFF SIPPLE

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by Frank S. Todd

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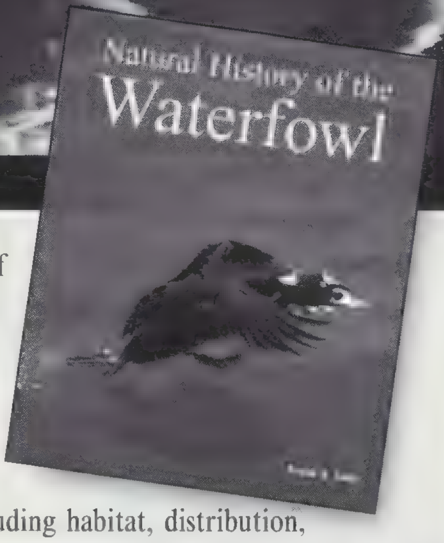

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The more than 750 beautifully reproduced photographs represent a lifetime of intensive research and field study by the author. In his foreword, world famous ornithologist Paul Johnsgard writes, "Probably no other living person has traveled so far to observe and study waterfowl and other aquatic birds than Frank Todd, and certainly nobody has photographed ducks, geese and swans more extensively."

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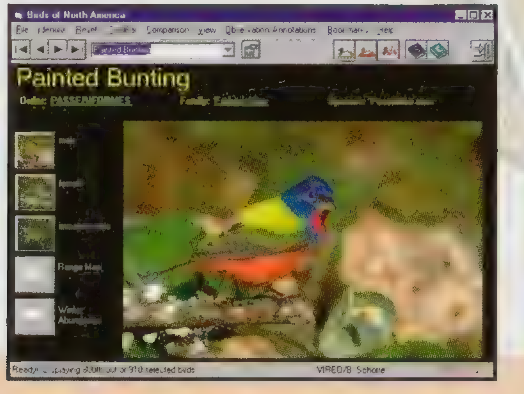

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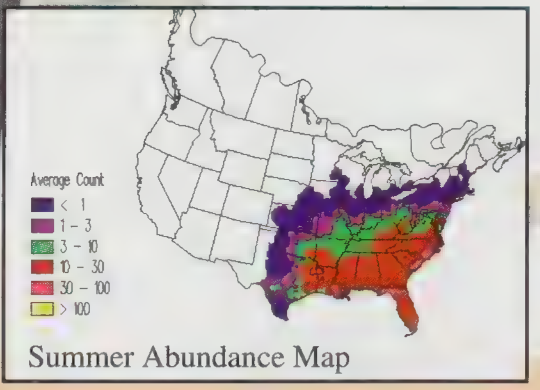

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LIVING BIRD

SUMMER 1997 VOLUME 16 NUMBER 3

GREETINGS FROM SAPSUCKER WOODS

Whenever I think of rails, I remember the many hours I spent trying to photograph these elusive birds at Back Bay Newport in California. I lived near there for several years, and it was one of my favorite spots for birding and photography. It was also one of the best places around to find Clapper Rails. Capturing their images on film should be a snap, I figured.

It wasn't. Maybe I was overeager. Maybe I was just unlucky, but trying to photograph these birds was a nightmare. Drab colored and secretive, they were always moving furtively in the shadows—not a good situation for photography. Though I set up my equipment day after day, often in areas where people had recently seen Clapper Rails pop out of cover and walk around boldly in full view, it took me months of effort to take some acceptable pictures of these birds, as well as shots of Virginia Rails and Soras. But even now I'm not completely satisfied with the images I have of these species.

Because of my own experiences (and failures), I'm completely in awe of William Burt's pictures of North American rails. Not only does he have stunning shots of the species I struggled so long and hard to photograph, he also has the best pictures ever taken of those feathered phantoms, the Yellow Rail—"a straw-colored bird that lives in straw"—and the tiny Black Rail—a "feathered mouse." It takes a connoisseur to appreciate the subtle beauty of a rail, and Burt is such a person. In his photographs and in his rich, almost impressionistic prose, he captures the essence of these birds and their secret world. We are pleased to present a portfolio of his rail photographs in this issue, along with excerpts from his book, *Shadowbirds.*

— *Tim Gallagher*
Editor-in-Chief

Cover: A Stilt Sandpiper in breeding plumage stands near its nest site on the Canadian tundra. Like many shorebirds, this species breeds in the arctic reaches of Canada and Alaska but spends most of the year in warmer climes, far to the south. Photograph by Tom Vezo.

Right: A stunning Indigo Bunting is just one of the colorful birds you might see while touring the Civil War battlefields of old Virginia. See "Marching Through Virginia" on page 14. Photograph by Lang Elliott.

Back Cover: A Black Rail peers out from its nest, hidden in dense grass. Few birds are as difficult to photograph as the Black Rail—a dark, sparrow-sized marsh bird that is quick on its feet and secretive. For more photographs of this and other North American rails, see "Chasing Shadows" on page 8. Photograph by William Burt.

8 CHASING SHADOWS *by William Burt*
One man's photographic odyssey in search of rails.

14 MARCHING THROUGH VIRGINIA *by Jerry Uhlman*
Exploring Civil War battlefields and birding opportunities along Robert E. Lee's final route of retreat.

20 THE SWALLOWS OF KAMPI YA PIPPA *by Netta Pfeifer*
A season with Joy Adamson in Africa.

24 BIRDS AND AIRCRAFT: ON A COLLISION COURSE? *by Peter Friederici*
Researchers race to develop effective techniques to avoid catastrophic collisions between birds and aircraft.

Departments

4 LETTERS

5 BIRDNEWS

Columns

6 FLYING FIELD *by Mel White*
Bright, shining bookmarks

31 IN THE FIELD *by Jack Connor*
Courtship testing

35 PROFILE *by Anne W. Semmes*
Chandler S. Robbins

38 THE CATBIRD SEAT *by Pete Dunne*
Policing ourselves

LIVING BIRD

SUMMER 1997 VOLUME 16 NUMBER 3

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Letters

AMERICAN WHITE PELICAN BY TIM GALLAGHER

INDEPENDENT STUDY

I found Jack Connor's article "Free and Easy?" (Winter 1997) to be quite intriguing. I'm a just-fledged conservation biologist by training and a beginning bird watcher in the Washington, D.C., area. I enjoyed the challenge of Connor's request for hypotheses on why some species are seasonal while others are year-round soarers.

Using my Peterson guide and other books I came up with a possible answer. Wood Storks and American White Pelicans feed in areas such as marshes and ponds. Like carrion, these refuges do not move. Possibly a patchy distribution of food-rich marshes and ponds requires the storks and pelicans to migrate among sites. These species may be using thermals to gain altitude and then soar across the landscape searching for appropriate feeding habitat. I've read that falling water levels concentrate Wood Stork prey in small pools, therefore available prey could be dispersed over a wide area. The pelicans may use soaring to search for schools of fish.

This was my first issue of *Living Bird.* I hope that your articles will continue to inspire me to do a little research of my own. I learned a lot about soaring birds in the time I spent looking up all of the species you mentioned.

Gina Sedaghatkish
Greenbelt, Maryland

A PASSION FOR BIRDS

Congratulations on your Winter 1997 issue! Much praise is due. "From Passion to Profession" was truly a winner. Articles like that one are few and far between. It was a breath of fresh air compared to the suffocating "You *must* have an advanced degree or else!" attitude that permeates so much of society today. My love for birds began at the age of nine. Now, 11 years later, it has led me not only to being an avid, experienced bird watcher but also a bird photographer, artist, and poet. And I have recently been given the go-ahead to start helping to rehabilitate Bald Eagles and other raptors at a local wildlife conservation center.

As you can see, this "passion" has led me to the point that I want to create a career out of my love for birds. What this article showed me is that there have been many others who've had the same idea and that some of them—through much labor, effort, and time—have achieved their goal of making important contributions to ornithology without an advanced degree.

Thank you so much for the encouragement and support and keep up the excellent work.

Nathan Smalley
Drew Plantation, Maine

HAPPY TRAILS

I enjoyed the Spring issue of *Living Bird* and all the lovely photographs. The article "A Working Ranch" especially appealed to me. I've always had a dream of going on a trail ride. It must be great being able to combine it with birding. But I'm afraid it will have to remain just a dream—my age (75) and the arthritis in my hips and knees will keep me off a horse.

Patricia Huenemoerder
Appleton, New York

We welcome letters from readers. Write to The Editors, *Living Bird,* 159 Sapsucker Woods Road, Ithaca, New York 14850, or send e-mail to <livingbird@cornell.edu>.

BirdNews

Building BirdSource

The National Audubon Society and the Cornell Lab of Ornithology are collaborating to create BirdSource—an interactive web site in which birders and ornithologists will be able to share information on bird sightings, movements, populations, and more. Although creating a web site capable of processing both historic data and continuously updated reports stretches the capabilities of present World Wide Web applications, programmers at the Cornell Theory Center who are currently designing the system are confident that the first stages of BirdSource—online data submission and retrieval from Project FeederWatch and the Christmas Bird Count—will be operational by the end of the year.

"When it's completed, you'll be able to go to BirdSource and ask, 'Where were Dark-eyed Juncos in December 1934?' and instantly see a map displaying reported sightings of that species," says Lab director John Fitzpatrick. "Eventually, you'll be able to 'watch' as millions of migrating hawks from North America funnel through Central America on their way to South America. You'll also be able to come home from a day of birding, log on to BirdSource, and share your checklist with thousands of other amateur birders and professional ornithologists who need your data." Ultimately, BirdSource will also provide detailed pictures, recorded songs and calls, and information for hundreds of bird species to help birders identify and learn more about the birds they see.

According to John Flicker, president of Audubon, BirdSource will provide the most current and comprehensive data available on the distribution, migratory pathways, and population trends of North American birds. "This partnership is a perfect marriage of Cornell's high-tech computer capabilities, the Lab of Ornithology's citizen-science team, and Audubon's thousands of volunteer birders collecting data at the grassroots level," he says. In addition to archiving data from Project FeederWatch and other Lab citizen-science projects, BirdSource will include data from long-running national projects, including all the Christmas Bird Counts since 1900. These counts, managed by the National Audubon Society, collect data from more than 45,000 volunteer participants each year.

BirdSource will also offer an array of new opportunities for citizen-science participation in birding. "An estimated 30 to 60 million people in North America watch and feed birds," says Fitzpatrick. "At this moment, thousands of people are jotting down their observations. If they would 'jot' their notes into BirdSource, we'd have their data recorded in an immediately usable form. We will eventually have up-to-the-minute accounts on where birds are at any given moment—and so will anyone who opens BirdSource."

Both Flicker and Fitzpatrick emphasize how valuable this data—collected from thousands of birders from across North America—will be to bird conservation. "If we could have had something like BirdSource in the 1890s, when there were still Passenger Pigeons and Carolina Parakeets, perhaps we could have seen their declines early enough to save those birds. Now, we'll be able to get information about diminishing species in a form that we can understand and use while there is still time to help them."

Financial support for constructing BirdSource comes, in part, from a matching grant provided to the National Audubon Society by the David and Lucile Packard Foundation. The site will be comanaged by Audubon and the Lab of Ornithology. Stay tuned for more information on BirdSource in upcoming issues of *Living Bird.*

A New Magazine for Bird Conservation

Partners in Flight (PIF)—an international consortium of more than 150 agencies and organizations committed to conserving birds and their habitats across the Western Hemisphere—has a new magazine called *Bird Conservation.* Published by American Bird Conservancy (ABC) with support from the National Fish and Wildlife Foundation, the magazine comes out four times a year, coinciding with the birds' seasonal cycles: spring and fall migrations and the breeding and nonbreeding seasons. Though the magazine was just launched this past autumn and already has a substantial number of readers, ABC hopes it will eventually reach a million concerned citizens, providing late-breaking news on bird conservation efforts.

"*Bird Conservation* is a useful resource," says Rick Bonney, the Lab's education director and former chair of PIF's National Information and Education Working Group. "It suggests things that you can do to help save birds and their habitats, and no other publication has this much up-to-date news on bird conservation efforts, all summarized in one place, and contributed by the leading bird conservationists."

A subscription to *Bird Conservation* costs $15 per year. For information on how to receive *Bird Conservation,* contact American Bird Conservancy, P.O. Box 18417, Washington, DC 20036-8417; or call 1-888-BIRD-MAG; or send e-mail to <abc@abcbirds.org>.

Flying Field

BRIGHT, SHINING BOOKMARKS

by Mel White

What is my bird list? A collection of moments when my life changed.

A friend of mine has become acquainted in recent years with a German man, a fellow birder from a small city near Düsseldorf. They began as rather utilitarian pen pals—it was a way for Jim to practice his *Deutsch* and Klaus his English, with someone who shared a common interest—but as the correspondence continued they became genuine pals, as well.

Jim traveled to Germany, where he stayed with Klaus's family, met his fiancée, and, of course, went birding, braving the northern European winter to see Hawfinch, Crested Tit, and Pink-footed Goose. All concerned formed close ties. A while back, the transatlantic visit was reciprocated, and I was invited to go out birding with them on Klaus's first day in the New World.

Well, all right . . . I invited myself. I had thought for some time that it would be fun to observe a foreign birder's reactions to species that we see every day and usually take for granted. I wanted to see someone see our birds for the first time.

Jim and I both regretted that Klaus's schedule had forced him to come in February—two months later he would have hit migration and, we were sure, been overwhelmed by our brilliant wood warblers, which put to shame those drab, skulking, pigment-deprived things that Europeans call warblers. Still, even in winter there was a lot for him to enjoy. Cardinals, for instance, and Bald Eagles, and the beautiful Wood Duck. Also, our own brand of kingfisher, big and loud and eminently seeable.

A cardinal was in fact among Klaus's very first birds the next morning, on a feeder at the house where he was staying. His reaction, more or less, was, "Hmm . . . ja." Must be that famous Teutonic reserve, I thought. He's probably turning cartwheels inside.

We took him to a nearby park, where we were met at the entrance by a Pileated Woodpecker on a tall oak. This time, no verbal response at all: just a silent examination, and then he was ready to move on. The story was the same throughout the morning. Sometimes there would be a question—"This is what you call a chickadee, yes?"—but to judge from his emotions, Klaus might have been reading *Der Spiegel* in a dentist's waiting room instead of seeing bunches of brand-new birds.

By no means did he lack feelings or a sense of humor. Twice that day, I saw him burst out laughing: once when he saw players at a golf course riding carts ("You drive around in little cars when you are playing golf? What is the point?"), and later, when he saw a poster for St. Pauli Girl beer at a restaurant. (Apparently, in Hamburg, "St. Pauli girl" means something entirely different than just a jolly, rosy-cheeked barmaid.)

A couple of days later we went to an airport where Smith's Longspurs traditionally winter. Here's something, I thought, that will get his blood flowing, even in the bitter February wind—a bird that's a real speciality of the south-central United States. Sure enough, we found six of them, and, sure enough, Klaus's reaction was a slight squint, something like Clint Eastwood's look when a bad guy makes him mad.

Finally, though, I did get to see him show some emotion about a bird. When we stopped to look over a bare soybean field, he enthusiastically appropriated one of our scopes and set up for a long study of a flock of Lapland Longspurs. A long, long study.

Laps? They're way more common than Smith's, and at that time of year they weren't even pretty. What's more, they're even found in Europe . . . which was exactly the point. This was a chance for Klaus not just to add names to a list but to improve his practical birding skills. Lapland Longspur (or *Spornammer*, as the Germans call it) is a fairly scarce bird where he lives. By studying a big flock of longspurs now, at his leisure and at close range, he was improving his chances of making a correct identification when he saw them back home.

I thought: he yawns at a cardinal, he sniffs at a Pileated Woodpecker, he goes nuts over winter-plumaged Lapland Longspurs. Man, this guy must be a birder.

Mild sarcasm aside, I do respect and admire people whose approach to birds is more scientific than mine, which is a parfait swirl of entertainment, aesthetics, and distraction from humankind's failings.

In the long run, what is more satisfying: to travel to some faraway spot to check off a species I may never see again or to spend time in the woods at home learning the chip-notes of warblers? Plenty of people do both, I know. But with limits on my time, I often find myself hungering, guiltily, more for the quick sugar rush of new birds in new places than for the solid nutrition of self-improvement. When I saw Klaus treating a birding trip as Today's Lesson, it reminded me that I really should pay more attention to my classwork.

What exactly is my life list, anyway?

ILLUSTRATION BY JOHN SCHMITT

A friend, who despite being completely baffled by the concept of birding is a very keen and perceptive person, once picked up one of my bird notebooks and spent a few minutes thumbing through it. She made no comment about the catalog of odd names and unfamiliar places until, putting it down, she said simply, "This is the story of your life, isn't it?"

Is it? After I'd been birding a short time, I remember I sent a postcard to a fellow beginner with a message that read, verbatim and in toto, "Scarlet Tanager!!!" (There may have been four exclamation points; I'm not positive about that.) After 23 years, I could take you to the exact tree where I saw that bird, and I'm sure everyone reading this could tell a similar tale.

That's my bird list: a collection of moments when my life changed. Only a little, to be sure, but perceptibly. One minute I didn't know how velvet-red the scarlet of a Scarlet Tanager glows, how the black is the black of the nothingness between the stars, and the next minute I did. The experience was just as memorable, just as educational, as seeing for myself how tall the Washington Monument truly rises or how luminous is the light of a Vermeer.

It's hard for the patient acquisition of experience to compete with such moments. Studying the tertials of dowitchers is broccoli; a new bird is Sacher torte with whipped cream. And Mother isn't usually around to make me eat my vegetables.

Just like dessert, when it comes to seeing lifers, the line between a delightful amount and too much can be distressing to cross. On my first trip birding out of the country, in Belize and Guatemala, I saw dozens of new birds, and it felt just fine. It was an appropriate introduction to the diversity of the tropics, and yet I had time to savor each bird's metamorphosis from illustration to living thing—a trick nature pulls off better than Disneyland does.

Then there was the time I arrived at a camp on the Napo River in Peru and saw nine life birds in the time it took to walk from the boat dock to the privy—a trip, by the way, that I was fairly anxious to complete. This number, just a single digit, was still too many for such a brief time span. Not only did the birds appear far too rapidly, but almost all of them were so exquisitely beautiful that their debuts on my list deserved especially long periods of afterglow, which in the circumstances they did not get.

Spangled Cotinga was first, and nearby were Lemon-throated Barbet, Swallow-Tanager, Cobalt-winged Parakeet, Masked Crimson Tanager, Rufous-bellied Euphonia, Black-faced Dacnis, Purple Honeycreeper, Velvet-fronted Grackle, and the presumptuously but not unwarrantedly named Paradise Tanager—one of the few birds I've ever seen that makes a Painted Bunting seem decorous. Today, I look back on that blur of colors with a bit of melancholy. What could have been a series of exquisite memories was compressed into just one, like having to rush through a museum in the last half-hour before closing.

Ah, but it's good to remember the sin of gluttony, I tell myself, and rather than dwell on the disappointments I try to be thankful for the literally limitless moments of wonder and discovery birds offer us.

Years later, I can vividly recall those frantic few minutes in the rainforest when birding was, as it has so often been, the defining experience on a trip full of new experiences. Looking through my list these days is like running through a multimedia show in my mind, not only of sights and sounds but sometimes the feel of sweat on my back, the fecund smell of a salt marsh, or the taste of some exotic food in a foreign land where my obsession has taken me. Look up Boreal Chickadee for the scent of spruce; turn to Chestnut-collared Longspur to be on a lonely road on the Nebraska plains.

Are birds the story of my life? No, they're not—but most assuredly they've been bright, shining bookmarks along the way. ■

"He yawns at a cardinal, he sniffs at a Pileated Woodpecker, but he goes nuts over winter-plumaged Lapland Longspurs. Man, this guy must be a birder."

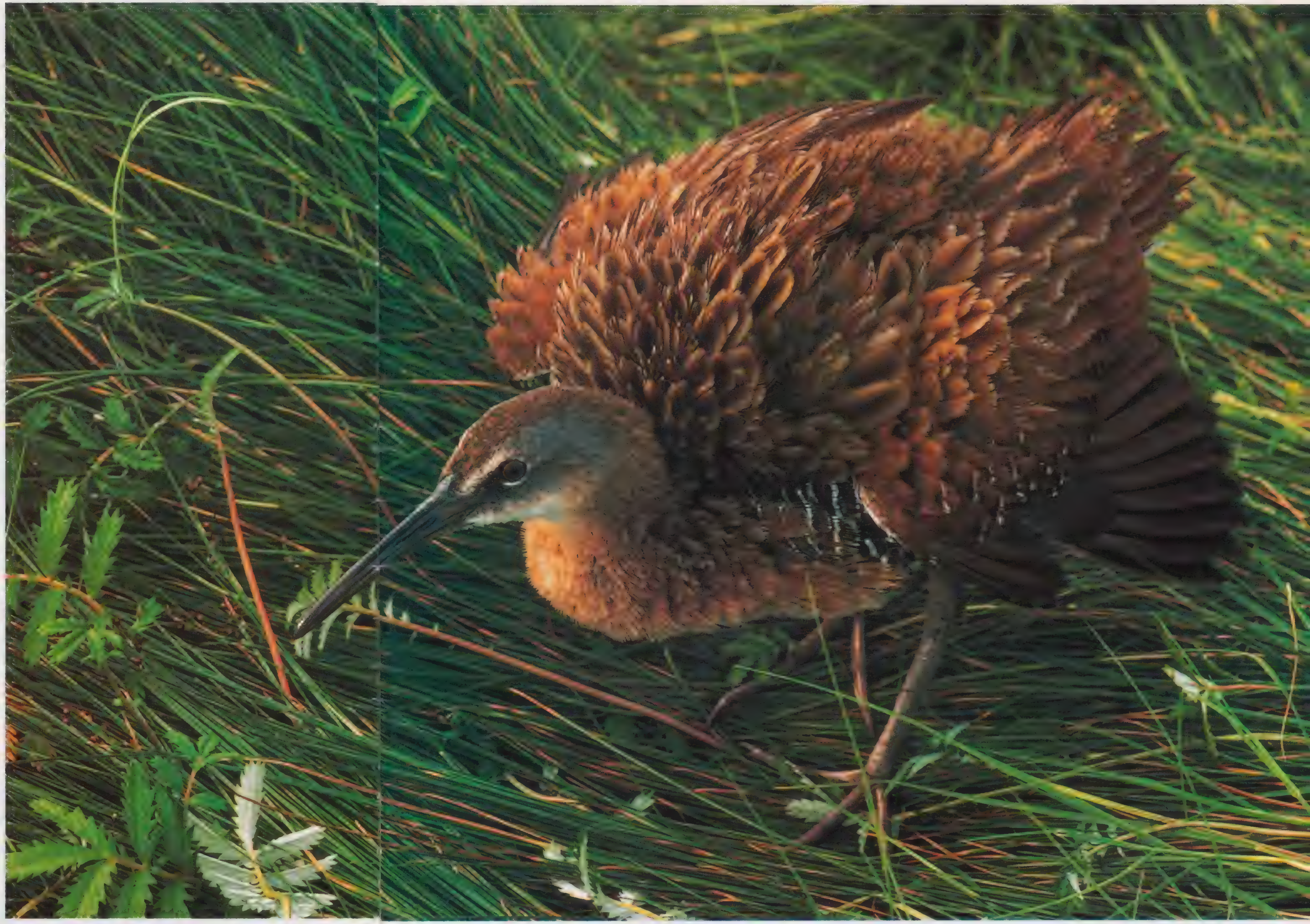
CHASING SHADOWS

TEXT AND PHOTOGRAPHS BY WILLIAM BURT

One man's photographic odyssey in search of rails

It takes a special person to appreciate the subtle beauty of rails—those drab, unassuming marshland phantoms, which are usually seen slinking furtively in the shadows, if you're lucky enough to see them at all. Nature photographer and author William Burt first got hooked on rails as a teenager, exploring the cattails along the Connecticut River, where King Rails and Virginia Rails lurked. He's been obsessed with rails ever since and has spent years attempting to document, with a camera, their secretive ways. In this vivid portfolio we present a gallery of the rails he's photographed—all six North American species, ranging from the common Virginia Rail to those feathered will-o'-the-wisps, the Black Rail and Yellow Rail—along with excerpts from his fascinating book, Shadowbirds, *which details the adventures and frustrations of his several-year-long effort to get the last two species on film.*

— Tim Gallagher



Rich brown in color and nearly the size of a chicken, the King Rail is usually found lurking in freshwater and brackish eastern marshes. Author William Burt photographed the bird above in a marsh near his home in Old Lyme, Connecticut.

What is it about rails? They would seem deliberately designed to be displeasing, these dull-colored, songless birds that live in inconvenient places. You don't find them printed on postage stamps or postcards or place mats or on the pages of calendars, in company with cardinals and egrets and owls. Most people have never heard of rails (of feathered ones, at least). Nonetheless, to those who know them, they are items of irresistible appeal.

It is the elusiveness, the inaccessibility, that fascinates. Rails are masters of their unsolid haunts, haunts in which one's human body is outsized and overweight and in the way. We wander into marshes to become helpless and unable, to flounder and splash and stick and stall and curse and drag ourselves about while blithely around us, unseen, like live shadows the rails skip weightlessly away over water and mud and floating green plants, hooking with long curved toes the grass and streaking through their jungle world with frictionless and unimpeded speed, playfully, free and fluent in their elements as eels among kelps, as swallows and falcons that swim the air.

Rails outstep us and outwit us—easily, naturally, without the need to try. In rails we "witness our own limits transgressed," as Thoreau said, writing of wild things.

Virginia Rail

The Virginia is the least discriminating of the rails; you find it almost anywhere there is a marsh. You find it in tidal Connecticut River cattails, in company with King Rails, and in

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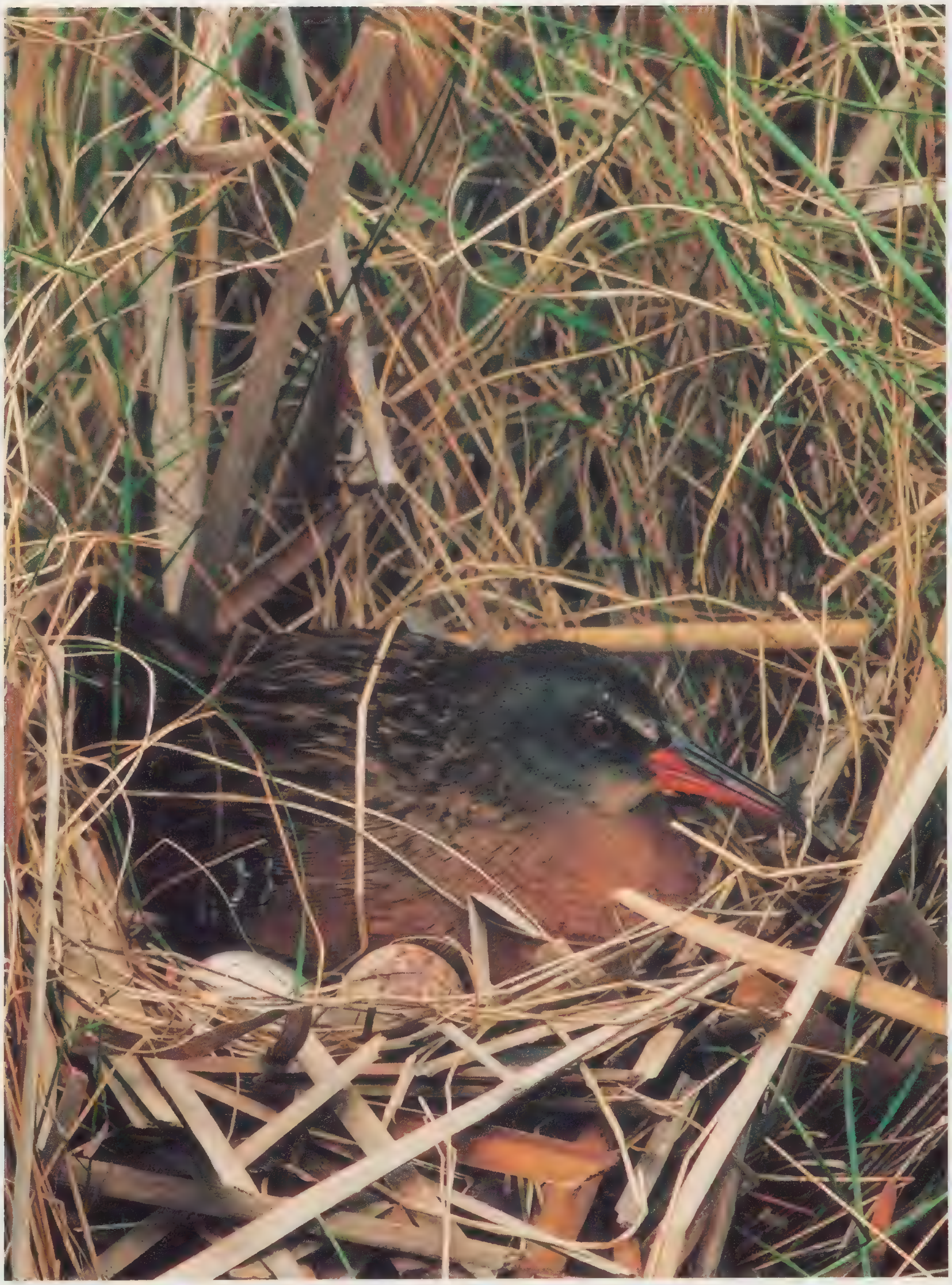


This intimate portrait of a Virginia Rail brooding its eggs (above) effectively captures the subdued beauty of this common but secretive bird.

Maryland *Spartina*, with Black Rails, and in Minnesota sedges with Yellow Rails, equally at home. You find it on the watery North Dakota prairie sloughs, living companionably with Soras. You find it where there are no other rails at all, in marshy fringes of ponds or sad gray remnants of marsh near cities, even in suburban marshes no bigger than backyards. The Virginia is the universal rail.

Virginia Rails announce themselves with single strident notes you could describe as shrieks—shrieks with body to them, with sonority, if that is possible. Sometimes, surprised, they flush, staying airborne for 10 or 20 yards before losing themselves again in the great engulfing marsh; the trajectory is that of a weakly drop-kicked football. In flight you know them to be Virginias by the long projecting bill, conspicuous on a dark brown bird quite undistinguished otherwise. You would not know, from the sight of the dark inconsequential object flapping away that the bird is actually a handsome one: richly, rustily brown and barred on the flanks with black, and embellished by blue gray on the cheeks and shiny nail-polish red on the base of the bill.

King and Clapper Rails

King and Clapper rails are larger, less-striking copies of Virginias. The king is more or less brown, the clapper more or less gray; otherwise, more or less, they look identical, both sporting the long-billed profile and lateral barring of their smaller Virginia prototype. Kings generally like freshwater marshes, and clappers generally like salt. Generally. If all this sounds a little indefinite, it is because it is: sometimes the two live together in intermediate brackish territory, in estuaries; and sometimes they interbreed, and you see intermediate rails, not really brown or gray, not really king or clapper.

One day by accident I found a King Rail's nest. Right at my feet a big brown bird jumped off its basketful of eggs and stood still, staring, engaging me like a warrior with feathers all puffed out and bristling, growling its animosity. Pictorially, the moment was a magic one. Under a leaden sky in soft, saturating light this bird stood fixed and menacing and regal. Racing past beyond him was the slanting dark green torrent of the grass, and clinging in the green were silvery, sawtoothed leaves of silverweed, bright and steadfast in the flow like riffles in a stream. He stood still and fierce, wings out; it was a gift, an accident, an opportunity to pluck . . . and I took it.

Sora

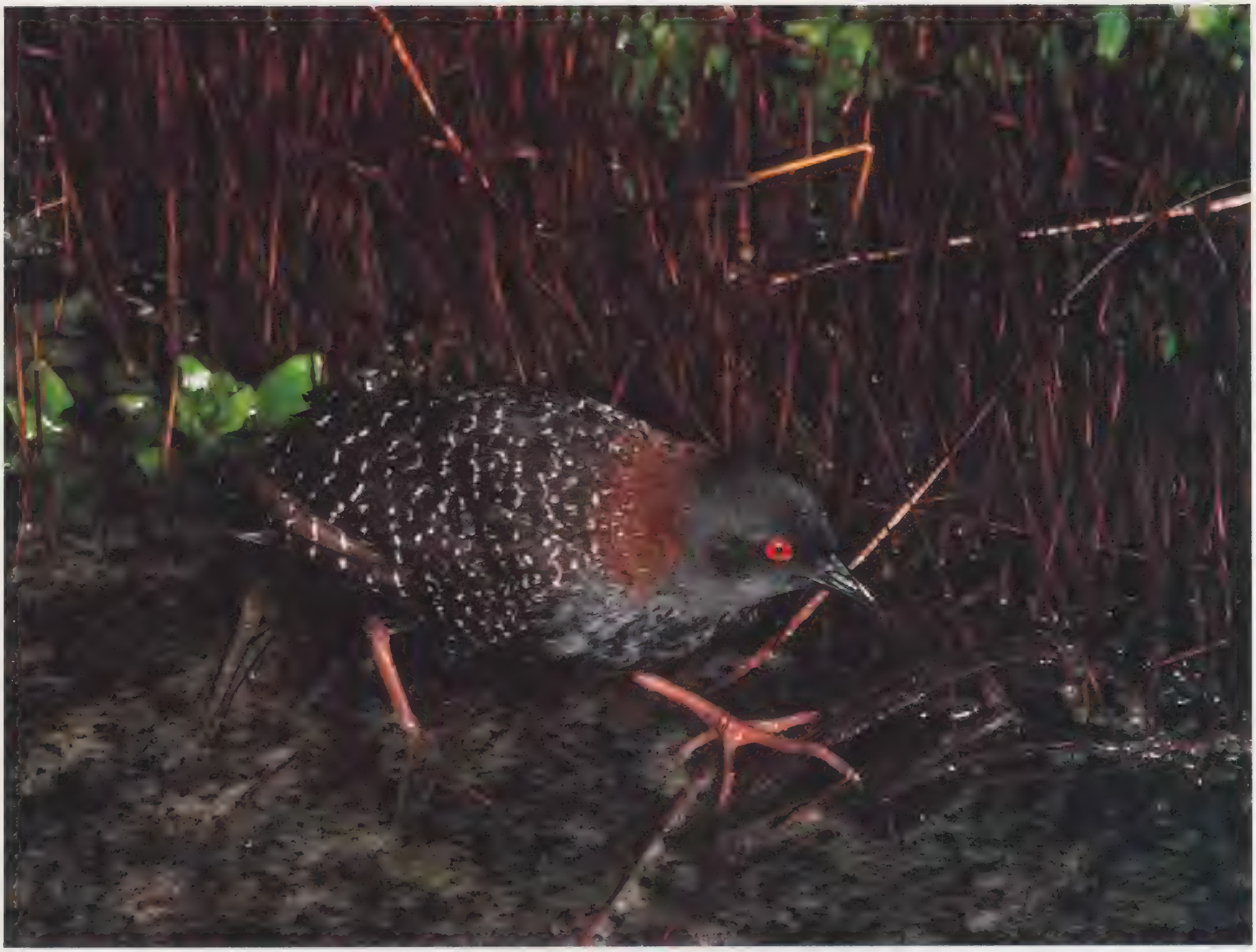
Soras are plump, dark, blunt-billed, midsized rails that are quite the vocalists, as rails go; their nasal sweet-and-sour whistles are almost melodious, compared to the guttural grunts

and simple iterations of the other kinds.

They live in freshwater marshes, often with Virginias, the two prowling the same cattails and crisscrossing in their travels and sometimes feeding next to one another on muddy margins peaceably, oblivious of their differences, like brothers. Sometimes, the two build nests adjacently, but nests of Soras are relegated mostly to the wetter, deeper regions of the marsh where Virginias cannot manage. Indeed, if a marsh has Soras, then almost surely there are Virginias, too. But, the reciprocal does not hold true: Soras are often absent altogether from wetlands chock full of Virginias, such as Connecticut River cattail isles, where the latter thrive.

Soras are crepuscular birds.

The Clapper Rail (top) is a paler, grayer, salt-marsh counterpart of the King Rail. Compared to other North American rails, the Sora (above) is almost musical. In spring, you can hear its plaintive ker-wee *or its descending whinny call in marshes across the continent.*



Stealthy, secretive, and small, Black Rails (above) and Yellow Rails (right) are nightmares for photography. Much more often heard than seen, they slip easily, nearly invisibly, through their grassy marshland habitats. With the birds pictured here, author William Burt completed his lengthy quest to photograph all six North American rail species.

Here, along the Douglas, Manitoba, roadside at dusk, there is much clowning around: they *eek* and splash and patter and chase each other about, shrieking, running in and out of view with streaking speed over watery, slimy surfaces, sometimes with wings rowing overhead, assisting. They are nervous birds, constantly flickering their tails, always cautious, and alert, and hesitant, loath to venture in the open even under cover of dusk—but impelled to try. A Sora will tiptoe out from the stalks of his cattail redoubt, look back and forth, then tiptoe farther, stop, look back and forth again, advance again—then stop with a jerk and freeze, as if having made a terrible mistake. With a sharp *eek* he will leap back for the safety of the cattails.

Black Rail

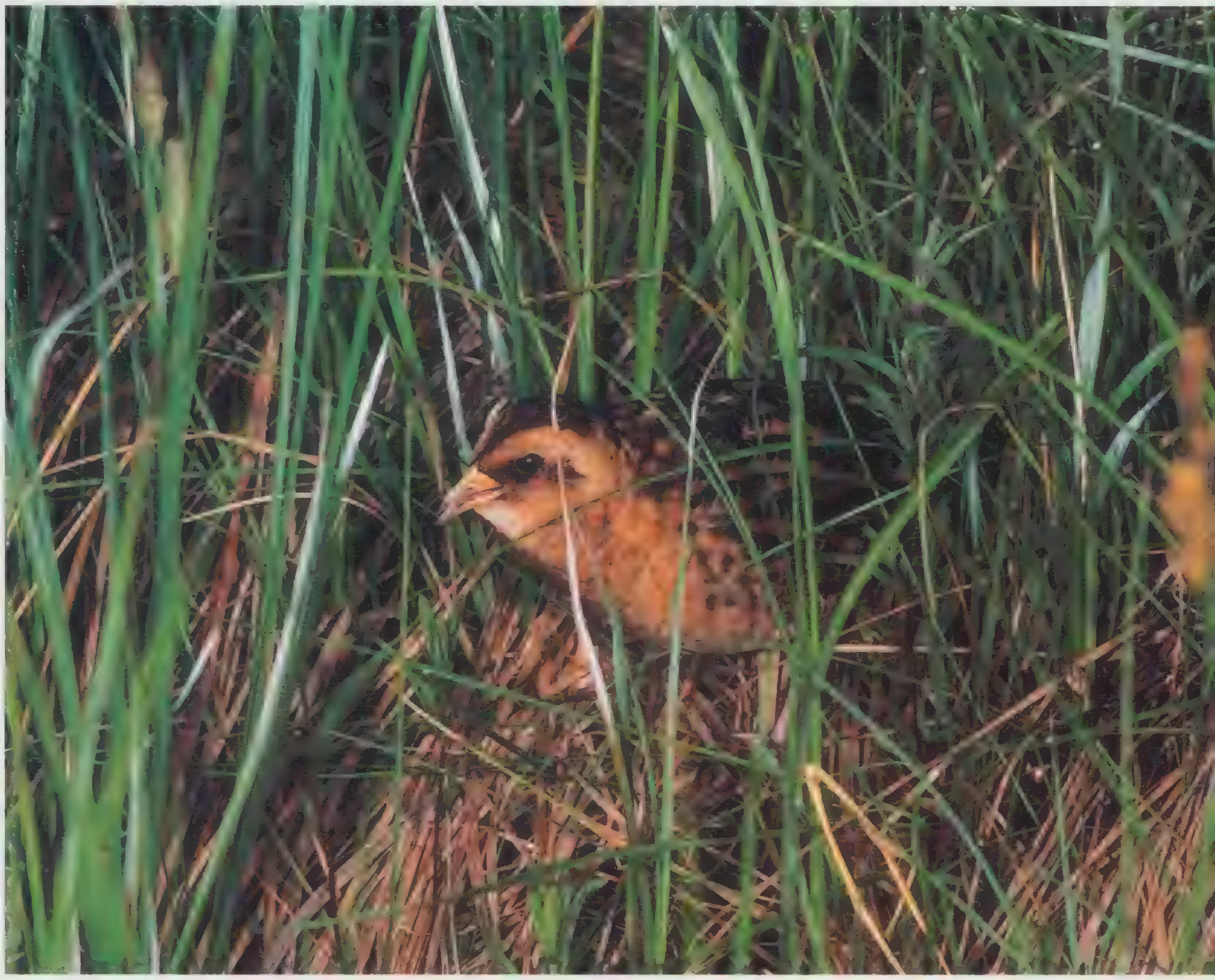
On a breezeless July day a salt marsh is an awful place to be. Steady sweat stings your face and neck, and the persistent prickling of mosquitoes occupies you otherwise. Nest hunting is a task, to say the least. It's a defensive effort. Nests found are the usual ones: several of Red-winged Blackbirds and Seaside and Sharp-tailed sparrows, and one of a Virginia Rail. It must be that Black Rail nests are so few, and the territory is so stupendously vast, that one really is looking for a needle in a haystack—or a needle in a landscape full of haystacks. The odds are against you.

Through the hot grass I continue an aimless, uninspired course. Up ahead is a disturbance in the evenness of green, an arranged canopy that signals the presence of a nest: a Seaside Sparrow's, with four eggs. More aimless wandering. Another canopy, another nest: another Seaside Sparrow's. . . . No, the eggs are too big. Meadowlark? There are six eggs, too many for a meadowlark. A trick? An illusion? I know better, really; the off-white eggs with their spatterings of brown and burgundy are unmistakable. It's the nest of a Black Rail.

It's a canny, quick-footed little bird—a "feathered mouse," in the words of ornithologist Alexander Sprunt, Jr., that spends its life in the fine grass of salt meadows. Its stealth is legendary, and it should be: the Black Rail is so secretive, so deftly elusive in its vast, green, filamentous world that a person can spend hours in a salt marsh every day, walking among these birds, and never catch sight of one. When approached it does not fly, like any usual bird; it slips away beneath the grass on foot—easily, imperceptibly, like a mouse.

Yellow Rail

The Yellow Rail is larger than the sparrow-sized Black Rail, about the size of a bluebird with the tail cut short; and it is slower moving. But this rail is no less a genius of invisibility. It is a masterpiece of camouflage, for one thing, a straw-colored bird that lives in straw. And its motion is something magical: here is a bird that threads its way through the grass with the fluency of a snake. The Black Rail relies on celerity for escape—quick as a blink it can spring away, like a flea; but escape for the Yellow Rail is something smoother: it just melts away.



Yellow Rails belong to the northern prairies. In June, when Black Rails are running around in the fine *Spartina* of their southern meadows, yellows are busy in sedge meadows, mainly from Michigan west to North Dakota, northward all the way to Hudson Bay. Of course they don't live in just any sedge meadows; plant species, successional stage, water depth—all must be right. Snails are a factor too; it is a matter of diet. No snails, no rails.

When all the factors are right, though, there is still no guarantee of Yellow Rails; some sites that seem quite perfect are quite devoid of them. So it is, with birds of personality.

Yellow Rails, like blacks, are found by sound, and only very, very rarely are they found by other means. You hear them at night, on their nesting grounds, in June and, to a lesser extent, in May and July. The call is nothing more than clicks: mechanical, typewriter-like clicks not plausibly the work of any bird. "Notes" would seem a flattering word, but notes they are, toneless notes fired off in stutters of two then three: *tick-tick, tick-tick-tick, tick-tick, tick-tick-tick*; and so on, delivered with the driven, disciplined intensity of a machine.

Winding through the grass, a Yellow Rail is a fluent marvel to behold. With nodding little dovelike head he steadily seeks, nudges, pries, insinuates his way through, and the rest of him slenderly follows. Smoothly, flowingly, he threads his way through tangles and snarls and clefts, along suggested and imagined pathways, through stiff and dry, through new and green, through coarse, through fine; with unvarying agility he worms, mouses, snakes his way along.

It is hard to think of rails as handsome birds; the usual dim and fleeting view is of a blunt form, drab as mud. But the privileged view finds unsuspected color and beguiling delicacy of design. They are beautiful birds, in their own unbright, understated way; theirs is a beauty of subtlety, of texture, of richness of brown and delicacy of gray, a beauty of modesty and mystery. ■

William Burt is a freelance nature photographer and author who lives in Old Lyme, Connecticut. Shadowbirds, *his first book, was published by Lyons and Burford of New York.*

MARCHING THROUGH VIRGINIA

If you like birds and historic battlefields, you'll find plenty of both as you retrace the Confederate retreat from Germanna Ford, where Union forces crossed the Rapidan River into Virginia in the spring of 1864, to the sleepy village of Appomattox Court House (above), where—after four years of intense, nearly nonstop fighting—Robert E. Lee's proud but battered Army of Northern Virginia finally surrendered to Ulysses S. Grant's victorious troops.

SAM ABELL

Exploring battlefields and birding opportunities along Robert E. Lee's final route of retreat

BY JERRY UHLMAN

Birders who are also Civil War enthusiasts will now have ample opportunities to enjoy both pastimes along the highways and byways of central Virginia. A newly designated automobile trail called the Virginia Civil War Trail closely follows Confederate General Robert E. Lee's route of retreat in the final months of the Civil War. And, fortunately for birders, this 180-mile self-guided trail system threads its way through a wide variety of excellent bird habitats, crisscrossing through forests, farmland, and river systems from the foothills of the Shenandoah Mountains in the north to the Piedmont of central and southern Virginia. Shaped like a huge backward L, the trail is divided into two distinct sections: "Lee versus Grant: The 1864 Campaign," which starts in northern Virginia at Germanna Ford and runs southward, ending at the Petersburg National Battlefield, and "Lee's Retreat," which extends from Petersburg to Appomattox.

Lee versus Grant: The 1864 Campaign

In March of 1864, Ulysses S. Grant takes charge as general-in-chief of the Army of the Potomac. He decides that instead of focusing all of his energies on capturing the rebel capital at Richmond, his major aim will be to defeat Robert E. Lee's Army of Northern Virginia, the pride of the South. His army outnumbers Lee's by two to one, but the Southerners have proven repeatedly to be fierce, resourceful fighters. Victory will not come easily. Grant has his first major confrontation with Lee during the Battle of the Wilderness, a fierce clash lasting from May 5-6. Only resting his men for one day, Grant marches his army to Spotsylvania, where they meet Lee's troops in another horrendous battle, lasting from May 8-20. The casualties are staggering: some 18,000 Union troops and perhaps 10,000 Confederates fall there. But the Confederates can ill afford to lose any men. General Grant's troops push the Confederates all the way to Petersburg, south of Richmond, fighting constant grueling skirmishes and battles the entire way. All told, these warring armies suffer a combined total of some 70,000 casualties in Lee's crushing 42-day retreat from Germanna Ford to Petersburg. There, Lee's army digs in, fighting off every Union attack. Hope-

Robert E. Lee

Ulysses S. Grant

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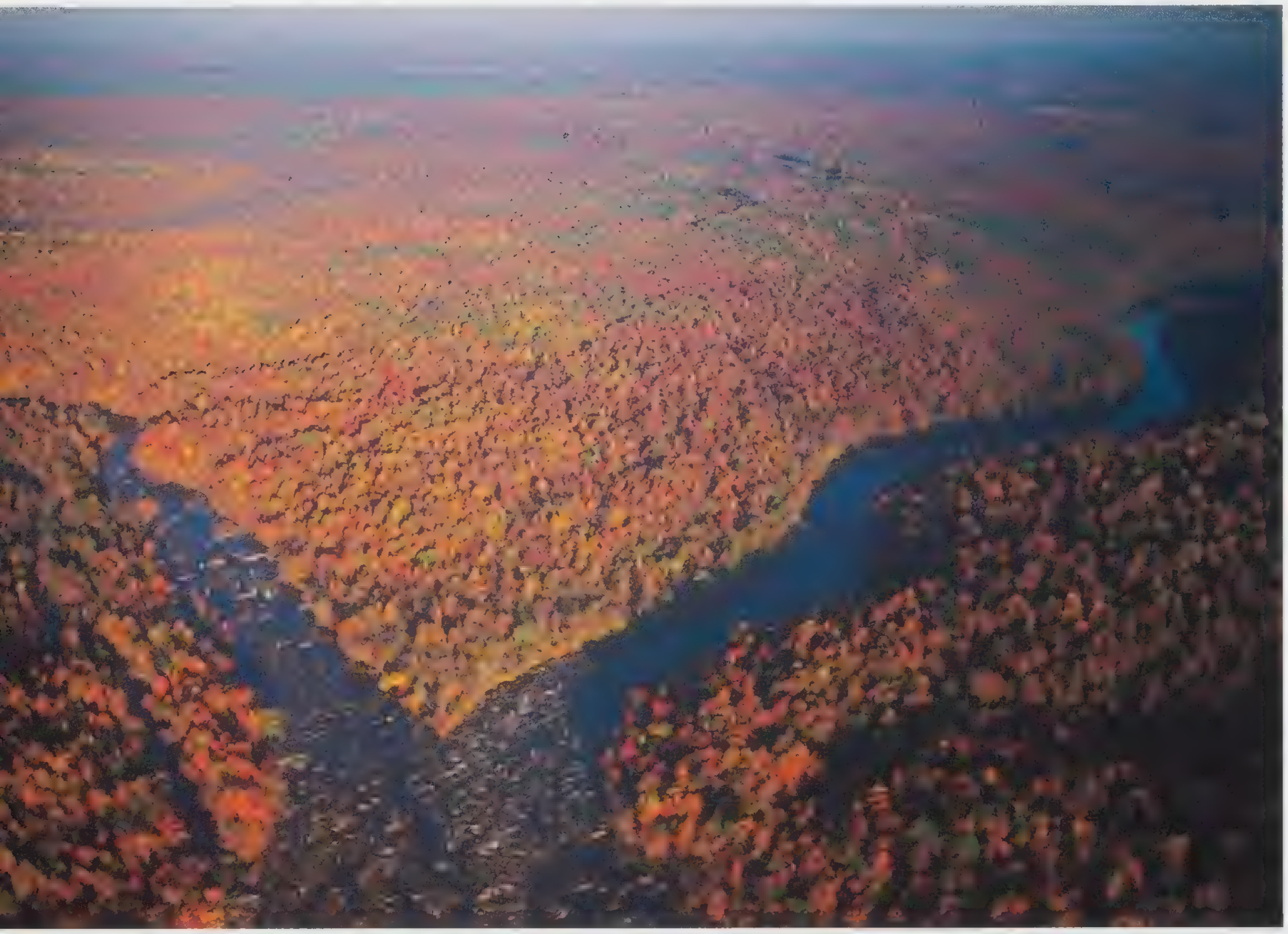
lessly outnumbered, hammered by cannon fire, and eventually cut off from their supply lines, the Confederates stubbornly hold on—through the rest of 1864, the long, cold winter, and into the spring of 1865, at the end subsisting on starvation rations.



The Confederate troops hammered the advancing Union forces relentlessly as they tried to push through the tangled Wilderness (above) in a fierce two-day battle. Instead of resting or withdrawing, the Union troops—led by their new general-in-chief, Ulysses S. Grant—raced forward to Spotsylvania, where the two armies fought another horrendous battle for nearly two weeks. Now, where these two warring armies once grappled in mortal combat lie peaceful fields and woodlands full of birds.

SAM ABELL

This first section of the trail system, approximately 100 miles long, will take you not only to the major battle sites of central Virginia, but also to many out-of-the-way and unfamiliar sites where skirmishes took place. The self-guided trail is marked by distinctive red, white, and blue Virginia Civil War Trail signs. Many of the 35 trail sites are simple byway pulloffs, with an interpretive note or detailed description of the Civil War encounter. Others, such as the Wilderness Battlefield Exhibit Shelter, the Spotsylvania Battlefield Memorial National Military Park, and the Petersburg National Battlefield, are major battlefields and memorial sites.

You can also visit several excellent natural areas for birding along or near the route. Lake Anna, to the west of the Civil War route, attracts significant numbers of birds. Much of the lakeshore is privately owned and developed, so the best access is through Lake Anna State Park, which you can reach by driving southwest from Spotsylvania on State Road 208. The Spotsylvania Civil War site is one of the most impressive battlefields on the trail, with heavy defensive earthworks where one of the bloodiest of the Virginia campaigns took place. An excellent walking trail through the battlefield can yield a variety of birds.

The 2,058 acres of Lake Anna State Park are primarily wooded, with lengthy access to the lakefront. Two well-marked trails provide access to much of the park. In spring you can find an assortment of warblers, tanagers, and other woodland songbirds, and in winter you can see a variety of ducks, geese, and swans. A second birding site is Poor Farm Park, about five miles west of Ashland on State Road 54 (about 15 miles north of Richmond). From the Civil War site at Nelson's Crossing, take 605 northeast to State Road 2/301. Turn north and proceed about two miles to the junction with State Road 54. Head west on State Road 54 across Interstate 95 and through Ashland to the park entrance. Poor Farm Park is relatively small: only 270 acres. Honeycombed with trails, it is an ideal spot for Ovenbirds, waterthrushes, and various warblers. Good hardwood stands attract treetop birds. Scattered pines and brush around open fields offer cover to bluebirds and flycatchers. You can often find ducks on the water treatment pond and an excellent variety of groundbirds—including Northern Bobwhites and Eastern Meadowlarks—in the fields around the radio tower.

The end of the first leg of the tour at Petersburg is one of Virginia's most important Civil War sites—the Petersburg National Battlefield, where the fate of the South was finally, firmly sealed. While you're in the Richmond-Petersburg area, plan on visiting several other nearby Civil War sites. The Richmond National Battlefield Park serves as a hub for a separate 80-mile drive to the Richmond metropolitan Civil War sites, which are well worth taking the time to explore. You can learn more about the rebel side of the conflict at the Museum of the Confederacy, along statue-studded Monument Avenue, and throughout Hollywood Cemetery, where several Southern generals and statesmen are buried.

Lee's Retreat

With the coming of spring in 1865, the fighting heats up again at Petersburg. On March 25, the Confederates launch an attack against Fort Stedman, just east of Petersburg, hoping that the Union forces will have to move some troops from the western part of their lines, thereby opening an escape route for

Lee's army. The action costs the Confederates nearly 4,000 casualties. On April 1, General Sheridan drives the Confederates away from the Southside Railroad, thus blocking the only remaining supply line to the city. Lee advises Confederate President Jefferson Davis to evacuate Richmond, the southern capital. Lee and his army finally retreat from Petersburg, hoping to join Richmond's retreating defenders as they flee to North Carolina. They expect to meet supply trains at Amelia, but the trains can't reach the town. Hungry and increasingly demoralized, Lee's troops must forage the countryside for food as they attempt to escape, fighting a running battle as they go. Grant is determined to stop them. Union troops capture 7,000 Southerners on April 6 at Sailor's Creek and then block Lee's remaining escape routes near Appomattox. "There is nothing left for me to do but to go and see General Grant," says Lee, "and I would rather die a thousand deaths." On Palm Sunday, April 9, 1865, Lee concedes defeat. Generals Grant and Lee meet at the McLean home in the village of Appomattox Court House to hammer out the terms of the surrender.

The second portion of the Civil War tour, "Lee's Retreat," begins in Petersburg and leads directly west to Appomattox—site of Lee's surrender—a length of nearly 80 miles. Similar to the north-south leg, Lee's Retreat winds through picturesque countryside and open fields that were forested at the time of the Civil War. A portion of the route follows a major east-west highway through southern Virginia (State Route 460) but frequently meanders along narrow byways through the rural countryside.

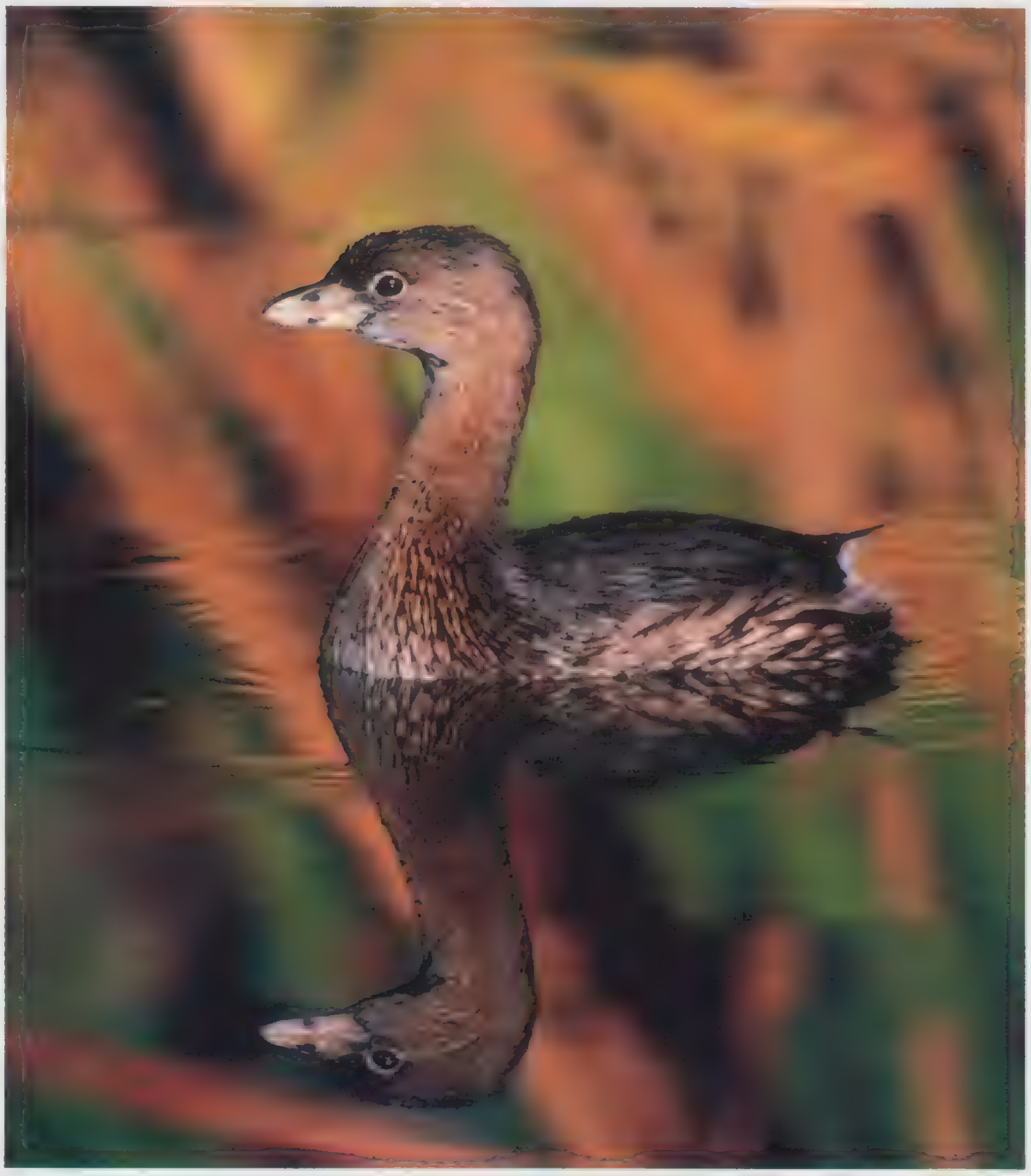
Along the byways of Lee's Retreat trail are 20 pulloffs at battle sites. Radio transmitters have been installed at each site, providing a brief recorded description of the battlefield action. By tuning to a specified AM radio broadcast band (clearly noted on the posted tour signs), you can learn the significance of each site from a recorded message. Recorded messages are also planned for the first portion of the trail in the future.

The Richmond-Petersburg area is the most promising staging ground for birding field trips. At least three natural areas should not be missed by birders—Lake Harrison National Fish Hatchery on State Road 5, a few miles west of the Civil War site at Wilcox's Landing; Henricus Park, site of the second English settlement in North America; and Pocahontas State Park, a remarkably wild area within metropolitan Richmond.

Lake Harrison National Fish Hatchery has ponds that attract Killdeers, sandpipers, egrets, herons, and other waders. But more important, it has a well-marked path that meanders through the woods along Herring Creek. Sluggish backwaters and thickets draw Ovenbirds, thrushes, and a variety of warblers. Wild Turkeys, ducks, and other game birds are common. Birders often see Ospreys and even Bald Eagles soaring over the fish-holding ponds.

Henricus Park is esteemed as the premier birding spot by locals because of its varied habitat. The park has lengthy frontage along the James River and contains a large marsh as well as a bluff with mixed hardwoods. A heron rookery sits atop snags at the back of the marsh, and in spring the noise and feeding antics of the young herons are a star attraction. A boardwalk brings you eye level with a number of warblers and perching birds. By late spring, Prothonotary Warblers have their fledglings in the lower branches, within easy viewing. Several duck species are common in the swampy marsh, and around the edges are American Bitterns, Belted Kingfishers, various flycatchers, bluebirds, Indigo Buntings, Blue Grosbeaks, and Yellow Warblers. You can reach Henricus Park from Richmond by taking Interstate 95 south to State Road 10 east. Near this intersection,

You can find Yellow-breasted Chats (above) during summer at many of the sites mentioned. Pocahontas State Park is a good place to look for nesting Wood Ducks, Great Blue Herons, and the occasional Pied-billed Grebe (below).



TOP, LANG ELLIOTT; BOTTOM, TOM VEZO

In the early spring of 1865, the Confederates attacked Fort Stedman, hoping to disrupt Union forces so the Southerners could break out of Petersburg. Several thousand men died in this futile effort. Now all that remains of the fort are these grassy embankments.

SAM ABELL (2)

County Road 732 (Old State Road) goes north to the park.

Pocahontas State Park, south of Richmond and east of Chesterfield near State Road 228, contains outback areas where a novice can easily get lost on the unmarked trails. The park is not only rich with birdlife, it also has deer, fox, and other interesting mammals. A clearly marked trail around Beaver Lake is well worth walking. At the opposite side of the lake from the visitors' center, an extensive wetlands draws a variety of birds. A longer trail—used by mountain bikers but also suitable for hiking—meanders through pine and hardwood stands. You can get a map of bike trails at the visitors' center if you'd like to explore some of the remote areas of the park.

The James River Park System, along the southern bank of the river, directly across from downtown Richmond, is also excellent for birding. A section called "The Wetlands" has a viewing blind that overlooks a small pond and an adjacent brushy field, which is managed to attract birdlife. A visitors' center near the 42nd Street access point has a naturalist on staff. Rockwood Park, in Chesterfield, has a boardwalk leading through wetlands, nearly side-by-side with a fitness trail. Spring brings a large number of bird species through the wetlands on their migration north.

Heading west from Petersburg along the Civil War Trail, three birding spots hold promise. The first, Amelia Wildlife Management Area, is north of the Civil War site of Amelia Court House. To reach the wildlife area, take State Road 360 east to County Road 604, then north to County Road 616. Turning left (west) on County Road 616, follow the signs to the wildlife management area. This state land is managed to attract game and birdlife. Although not marked, the trails are generally clear except in the late fall when brush may partially obscure them. This natural area has a lake, several small ponds, and long frontage on the Appomattox River. Thinned areas draw nuthatches, woodpeckers, towhees, catbirds, mockingbirds, Cedar Waxwings, Yellow-breasted Chats, and other birds that frequent brushy habitat. Cleared areas attract Indigo Buntings, Blue Grosbeaks, and bluebirds.

Another excellent birding area along the automobile trail is Sailor's Creek Battlefield State Park, site of the final major Civil War battle in Virginia. Overlooking the creek that runs through this 230-acre park is a monument commemorating the site of the final dissolution and routing of the Confederate troops (though the actual site of Lee's surrender lies at the endpoint of the driving trail at Appomattox Court House National Historical Park). You can wander leisurely through the woodlands and cleared areas at Sailor's Creek Park and find a great many birds. Sailor's Creek is easily accessible until vegetation blocks the way in midsummer. Although this site is not as good as the wildlife management area, it can be productive for birding.

Lastly, the Lee's Retreat trailend at Appomattox Court House National Historical Park, just east of the town of Appomattox, has excellent habitat for birds. Several walking paths lead throughout the park, and, although much of the terrain is open, it has sufficient cover to sustain a substantial resident bird population. The Appomattox River, a short walk from the exhibit buildings, is generally a more productive birding area, with flycatchers, vireos, Carolina Wrens, Common Yellowthroats, and a variety of sparrows. The National Park Service has restored several original buildings at the park, which were used by both Confederate and Union troops. You'll find fascinating exhibits, and you can take a guided walking tour conducted by park staff. Good picnic sites along the Appomattox River, a short downhill walk from the exhibit buildings, can add to the enjoyment of this pleasant setting.

The two sections of the Virginia Civil War Trail were developed by local consortia to promote economic development in counties along the Civil War routes. Two more routes are being developed, one focusing on the Peninsula Campaign in the southeastern Tidewater area and the other on the Northern Virginia-Shenandoah Valley Campaign. When it's completed, the trail system will link some 175 Civil War sites. Whether you're a birder, a Civil War enthusiast, or both, you'll find plenty to pique your interest as you explore these historic routes.

INFORMATION SOURCES

To negotiate the self-guided automobile routes, you'll need two separate brochures, both of which include detailed maps showing how to get to the battle sites. To order the "Lee versus Grant: The 1864 Campaign" and the "Lee's Retreat" brochures, call (888) CIVIL WAR. Both brochures, as well as other Civil War books and pamphlets, are also available at the Richmond National Battlefield Park, 3215 East Broad Street, Richmond, Virginia 23223.

An excellent source of detailed information on Virginia birding sites is David W. Johnston's *A Birder's Guide to Virginia*, published by the American Birding Association, P.O. Box 6599, Colorado Springs, Colorado 80934; phone: (800) 634-7736.

Grant is generous in his terms of surrender. He paroles all of the rebel soldiers. They must turn in their arms and artillery, but they are then free to return home. Those who own a horse or mule can keep them to use in the spring planting of crops. Union officer Joshua Chamberlain, who was present as the Confederates surrendered their weapons, later said of Lee's army: "Who can forget them? The brave, bronzed faces that looked at us for four years across the flaming pit—men whom in a hundred fierce grapples we fought with remorseless desperation and all the terrible energy of death, till on the one side and the other a quarter million fell—and yet we never hated. There was good reason why, when valor like that was exhausted, the sun should go down on thousands dead, but not one vanquished." ■

Jerry Uhlman is a freelance writer, birder, and Civil War enthusiast who lives in Richmond, Virginia.

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The Swallows of Kampi Ya Pippa

BY NETTA PFEIFER

A season with Joy Adamson in Africa

"Look at my swallows," Joy Adamson remarked rather possessively, I thought, as she pointed out a pair of birds she said were Wire-tailed Swallows. That was in January 1968, and I had just arrived at Kampi Ya Pippa to take up my duties as Joy's secretary and editorial assistant. Joy, famed author of *Born Free* and other popular books, had named her camp in Kenya's Meru National Park after her pet cheetah, Pippa, whom she had released into the wild.

If I'd had to rate my interest in those pretty little birds—with their white breasts, red heads, and shiny, metallic-like dark blue feathers—on a scale of one to ten at that time, they would only have received a lowly two. Far more important to me was arranging my suitcases, vanity case, and toiletries on a handmade palm-log table and shelf while Joy and I chatted, getting to know each other after having corresponded for two years.

"Those cheeky little devils, they have always nested in my studio hut," she commented again about the birds, using an English expression that got lost in her heavy Austrian accent. "I even built a platform for them in there. But, this year, I think they have other ideas."

It was true. The birds seemed to feel right at home with me, and eventually the fact that they built their nest in my hut told Joy, in a way I never could, that I was okay—although during the months I was with her, Joy teased me constantly about how I'd "kidnapped" them.

What neither Joy nor I realized then was that somehow those birds sensed they wouldn't be trapped. Despite roving elephants, lions whuffing within yards of camp, and a jackal who raided the studio hut and ran off with our trash basket in the middle of the night, the swallows knew I would never shut the door to my hut at night. I felt as much at home with them there in the African bush as they did with me.

A flutter of wings swooped over our heads again. With some building material in its beak, one of my "roommates" came to rest in the space where the palm-log rafters joined in a peak under the *makuti,* or palm-frond thatching, of the roof.

According to Bruce Campbell's *Dictionary of Birds,* Wire-tailed Swallows (*Hirundo smithii*) range from West Ghana to Benguela, Eastern Ethiopia to Zambia and Natal. Romantic that I am, I had imagined them migrating thousands of miles, through stormy weather, having left their nest and other fledglings behind. I was sure that they'd flown all the way to Kenya from some 16th-century cottage in the English Cotswolds. I just knew they were as jet-lagged as I. Our swallows, as it turned out, had probably returned to Joy's camp from not very far away.

Kampi Ya Pippa lay approximately eight miles north of the equator, which runs through Kenya's Meru National Park at exactly the place where Joy and George Adamson had camped with Elsa, the lioness—and at exactly the spot where Elsa died and is buried. Along the equator in Africa, the year is not divided into the four seasons common to most of the world. There are only two—the wet season and the dry season—which meant that the birds would have their work cut out for them. Swallows, Joy told me, usually breed before a period of peak rainfall. I estimated that they would have to build their nest, lay their eggs, and raise their young before the long rains came in March.

Together, the swallows and I settled into our respective routines. Had they come back to Joy's studio hut, which we used as a dining room and for reading and working after dark by the light of a Tilly lamp, the birds

ILLUSTRATIONS BY STEVE CARVER

could have remodeled their old nest. In my brand new hut, they had to start from scratch, building their cone-shaped mud nest right above my mosquito-netted camp cot. And they weren't the neatest nest builders. To keep the birds' construction debris from littering my suitcases and my bed, I had to shift the cot and move my table to the back wall.

Having bird-proofed my part of "our" hut, I started typing Joy's first cheetah manuscript, *The Spotted Sphinx,* in my "office" under a *paw-paw* (papaya) tree by the rivulet. While Joy set off across the plains each morning with her scout, Toithenguru, to search for Pippa and the three cubs who had begun to go off on their own, I enjoyed the company of little geckos scurrying around in search of bugs under my table. Superb Starlings chattered and fought over morsels of food on the ground while brilliant sunbirds—larger than a hummingbird, they have slightly hooked beaks and are more dramatically iridescent—fluttered over anything (including Joy, Pippa, and me) that looked like potential nectar.

In due course, the swallow couple began taking turns sitting on the nest. All day long, I wandered in and out of my hut, chuckling each time at the sight of a parent bird peering down at me, completely oblivious to my activities.

On February 18th, after I had been there about a month, Joy and I left on a sentimental safari to Isiolo in Kenya's Northern Frontier District. Our destination, as Joy put it, was "Elsa's house." The Adamsons had sold the cottage on whose verandah Joy had written *Born Free, Living Free,* and *Forever Free.* During the next week, Joy and George—who had left his Kampi Ya Simba (Lion Camp), 12 miles from Joy's camp to join us—made several trips back and forth between Isiolo and Elsamere. That's what Joy told me she was going to call their new retirement home, on Lake Naivasha in the Rift Valley 90 miles northwest of Nairobi.

Torrential rain made a normally slow drive back to camp over washboard roads even slower, and we returned late at night on the 26th. The next morning, to my surprise, I noticed that two swallow chicks had hatched. Because Joy's publisher's name was Bill, and I had a friend named Phil, that's what we called the young birds.

Aided by increasingly heavy rains, two days later our usually innocent rivulet overflowed its banks and flooded the camp. Within half an hour, with the help of Toithenguru, Choka, the cook, and Stanley, Joy's maintenance man, we moved the furniture from Joy's hut and the studio to higher ground. That happened to be my hut, which ended up filled with chairs, tables, beds, and mosquito-netting poles jutting out in all directions.

Kenya's wet season sent Joy and me to sleep, eat, and work in the claustrophobic confines of her Land Rover. By contrast, the rains turned out to be every swallow parent's dream come true. The clutter in my hut became flight training tools for their young. Both chicks landed on the mosquito-netting poles in their maiden voyages out of the nest.

Phil, the larger of the two, had trouble getting out, but on March 7th, he finally did it—backwards! Bill's turn came the next day when we saw the pair on the gate to our *choo* (outhouse). The birds also had a preening lesson from their parents that day and, while Joy was using her one-finger typing technique on her old Remington at her "desk" by the side of the studio hut, Phil landed on her stationery box.

All this activity must have been too much for the swallow family because, on March 10th, I wrote in my diary, "Swallows still in bed when we get up at 6:30!" The birds were usually

fairly vocal, but on that morning, they neither buzzed, twittered, nor did they move when Choka appeared with my morning *chai* (tea).

A week later, as the parent swallows fed insects they caught in flight to Phil and Bill on the laundry line behind our huts, and the two youngsters flew farther from camp each day, Joy found Mbili, her favorite of Pippa's cubs. Mbili had been on her own in the wild for a month, so Joy's reunion with her was the cause for great celebration when she returned to camp.

On March 19th, Joy and I saw Kampi Ya Pippa from the swallows' viewpoint. A visiting dignitary from the United States had breakfast with us and took us for a ride in his rented helicopter. Toithenguru, Choka, and Stanley couldn't believe it. *"Ndege! Ndege!"* (Swahili for both bird and plane), they shouted as we soared overhead, filming them, the birds on the laundry line, and our bush-camouflaged camp, from the air.

By March 30th, Phil and Bill were gone, and two more eggs appeared in the nest. When, on April 17th, Joy and I found a dead young bird on my table, we didn't know what to think since, from the debris on the floor below, we knew some hatching had taken place three days earlier, on Easter Sunday.

By the 21st, though, we could see a second pair of chicks in the nest. Pippa spent the whole afternoon of the 28th with us, upsetting the parent birds. George came to visit, too, and while he fixed Joy's typewriter, the swallows dive-bombed Pippa in a vain attempt to drive her from their territory which, of course, she thought was hers. By then the rains had subsided, and the water level in the creek had gone down. We'd removed the furniture from my hut, except for one of the birds' flight training mosquito-netting poles that Joy nailed to my shelf. On May 5th, two new chicks soloed, landing on the pole. One of them continued out the open door to join its parents, but the other couldn't. Three of its wing feathers jutted out at right angles to its tiny body.

For the next three days, the young bird sat glued to its pole. The parents fed the chick, which I called Shanti (Sanskrit for "peace"). Finally, on the fourth morning, after Joy and I had almost given up hope, something flew out of my hut and landed with a plop on the roof. It was Shanti!

Two weeks later, Shanti, too, was gone. Coincidentally, on May 17th, after not having seen Pippa's other two grown cubs for two months, Joy found Whity and Tatu, and they recognized her. I had been privy to Pippa's exit from the lives of her cubs, and by then Joy and I had been intimately involved with two generations of Wire-tailed Swallows. So, we were more than surprised when, on May 24th, we noticed activity that would undoubtedly lead to yet another.

No sooner had the chicks from batch number three hatched than Joy had to go Nyeri. Upon her return, Kampi Ya Pippa sheltered some 20 local Africans for the night. Several of the women swore they had seen white-turbaned Shifta (Somali bandits who periodically raided that area of Kenya close to the Somali border). Grudgingly recruited to guard all of us, George muttered and grumbled to whomever would listen, including the swallows: "The hind ends of Ostriches, that's what they saw . . . only the hind ends of Ostriches!"

He may have been right. The next day everyone disappeared, and we heard no more about Shifta or Ostriches for that matter.

In June, Joy went on safari with some Austrian friends, leaving me in charge of her camp. A pregnant Pippa came almost daily, always agitating the swallows, who by now were once more sitting on their nest. Joy's return in July signaled my departure. Before my already-extended visitors' permit expired, I wanted to see more of East Africa.

The swallows dive-bombed Pippa in a vain attempt to drive her from their territory which, of course, she thought was hers.

For me, unfortunately the time had come to say *kwaheri* (good-bye) to Joy, George, Kampi Ya Pippa, and the Wire-tailed Swallows, who by now I definitely considered mine.

During the six months I was with Joy, in addition to the swallows, I had seen a variety of Kenya's birds: kingfishers, Grey-crowned Cranes, vultures, Marabou Storks, Secretary-birds, Kori Bustards, woodpeckers, weavers, plovers, Hoopoes, nightjars, Lilac-breasted Rollers, Hammerkops, and even African Fish-Eagles and Bateleurs. Most of them I learned to observe after patiently being taught how to spot the slightest hint of color or movement in the bush by Joy and George.

To this day, I retain the skills they developed in me. When I think back on those days I spent with them, I thank Joy and George for something I never would have suspected on the day of my arrival at Kampi Ya Pippa. Remember how I wasn't the least bit interested in Joy's birds when she first introduced them to me? Well, because of those Wire-tailed Swallows, my priorities have changed. Now, on a scale of one to ten, I don't hesitate. Bird watching and bird conservation are definitely a ten. ■

Netta Pfeifer is a freelance writer based in Sedona, Arizona. This is her first article for this magazine.

Birds and Aircraft: On a Collision Course?

Researchers race to develop effective techniques to avoid catastrophic collisions between birds and aircraft

BY PETER FRIEDERICI

In 1911, less than a decade after the Wright brothers' first powered flight, Calbreath Rodgers became the first pilot to fly from coast to coast across the United States. Starting the flight in New York, he crashed 19 times along the way and needed four months of recuperation once he reached his destination at Long Beach, California. When he finally flew again, in a demonstration flight, he smacked into a flock of gulls, and the resulting crash killed him.

Aviation technology has come a long way since then, but the danger of collisions between birds and aircraft has not diminished. Sharing the sky has actually become more dangerous for aviators and birds alike as more and more aircraft capable of attaining ever-higher speeds and carrying larger payloads take to the airways. Most birds can easily avoid an airplane as slow as the Wright brothers' biplane, but nothing in their evolutionary background has adapted birds to react to dangerous objects moving through the skies at hundreds of miles an hour. And pilots traveling that fast often can't see birds in their way or react quickly enough to avoid them even if they do spot them.

Terrible damage can occur in high-speed, bird-aircraft collisions, as shown in the following grisly cases:

- In 1960, a Lockheed Electra taking off from Boston's Logan Airport flew into a massive flock of European Starlings. The resulting crash killed 62 of the 72 people on board.
- In 1973, a private Learjet struck a flock of Brown-headed Cowbirds and crashed in Georgia, causing eight deaths.
- In 1987, a U.S. Air Force B-1 bomber collided with an American White Pelican over southern Colorado. The resulting fire and crash killed three of the six crew members.

Such crashes are rare, but collisions that cause some damage to aircraft are fairly common. Researchers have an apt term for them: Bird Aircraft Strike Hazards, or BASHes. At John F. Kennedy International Airport in New York, more than 1,000 bird-aircraft collisions took place between 1986 and 1990—a little over one for every 1,000 takeoffs or landings. One 1995 study estimated that collisions with birds cause $200 million in damage to American civilian aircraft each year. And that figure may be low because pilots report only about one-quarter of all such incidents.

It might seem remarkable that a bird weighing a few ounces or pounds could seriously damage an aircraft weighing tons, but it's not so surprising when you consider the speeds involved. According to one Canadian study, a four-pound bird hitting an airplane flying at 500 miles per hour—a routine speed for many jet aircraft—results in

KEVIN SCHAFER

How is it possible that a bird weighing a few ounces or pounds could seriously damage an aircraft weighing tons? Consider the speeds involved. A four-pound bird hitting a jet airplane flying at the routine speed of 500 miles per hour results in an impact force equal to that of a one-ton object falling 22 feet. Above, Laysan Albatrosses are a constant hazard for aircraft landing on Midway Atoll.

BHL

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When this Red-necked Grebe (above) collided with a small Alaskan bush plane, the grebe lost its life, but the pilot landed safely. The pilot of this U.S. Air Force jet aircraft (below) wasn't so lucky. During a practice for an upcoming airshow in 1981, the pilot—a member of the Air Force's elite aerial demonstration team, the Thunderbirds—collided with a Ring-billed Gull over Cleveland's Lakefront Airport. He was killed as he attempted to eject from his stricken aircraft.

an impact force equivalent to that of a one-ton object falling 22 feet. When a bird is sucked into a jet engine's turbine blades or when it strikes a plane's windshield head-on, the results can be catastrophic.

The great majority of collisions take place near the ground, usually near airports. Many of them involve small birds, such as Horned Larks or blackbirds, which can damage a plane but rarely cause a crash. These collisions typically occur near the ground because that's where most birds spend the majority of their time; radar monitoring has shown that 90 percent of migrant birds fly below 5,000 feet. Commercial airliners cruise at much higher, birdless, altitudes throughout most of their flights—although one El Al jetliner reportedly struck a griffon vulture soaring at the astounding height of 37,000 feet.

Military pilots, though, often fly near the ground for extended periods. In the United States and other nations, military training involves frequent high-speed, low-altitude training flights. U.S. Air Force pilots routinely fly at altitudes of 1,000 feet or less, and they share that airspace with many species of large soaring birds, such as hawks, vultures, and gulls.

In recent years, Air Force pilots have reported an average of 2,700 collisions with flying birds annually, resulting in almost $40 million in repair costs. Most of these accidents take place near airfields and result in only minor damage. But some are disastrous: in 1995, an E-3B AWACS plane taking off from a runway in Alaska flew into a flock of Canada Geese and crashed, killing all 24 crew members. Overall, 33 Air Force crew members lost their lives in bird-aircraft collisions between 1985 and 1995.

Responsibility for reducing the likelihood and severity of bird-aircraft collisions has rested with a number of authorities, from municipal airport operators to the Federal Aviation Administration. But, no organization has worked more intensively on BASHes than the Air Force, which fields an official "BASH Team" at Kirkland Air Force Base in Albuquerque, New Mexico.

The BASH Team has generally used two basic strategies: scare birds away from where planes are or send planes only where there are few birds. The first strategy tends to be a

TOP: ERWIN AND PEGGY BAUER. BOTTOM: COURTESY BASH TEAM

low-tech one. Over the years, airfield managers have tried almost every imaginable technique for reducing concentrations of birds near runways: filling in marshy areas, mowing grass high to dissuade grassland species, firing noisemakers, broadcasting distress sounds, and even outright extermination campaigns.

They are also using a seemingly anachronistic technique: falconry. Last fall, falconers began flying Peregrine Falcons and Harris' Hawks along runways at Scott Air Force Base in Illinois. The base is along the Mississippi flyway, and concentrations of hundreds of thousands of blackbirds are not unusual in the area during migration periods. Collisions during takeoff were a perennial problem.

"The purpose of flying these falcons is to set up a sort of 'no-fly zone,'" says Mike Cooke, assistant director of the World Bird Sanctuary in St. Louis, which administers the falconry program for the base. "If there are blackbirds on or near the airfield, they take off and leave when they see a falcon circling overhead. It makes the airfield a safer place without having to resort to more draconian measures like shooting." Cooke says the falconry program has noticeably reduced blackbird concentrations and collisions.

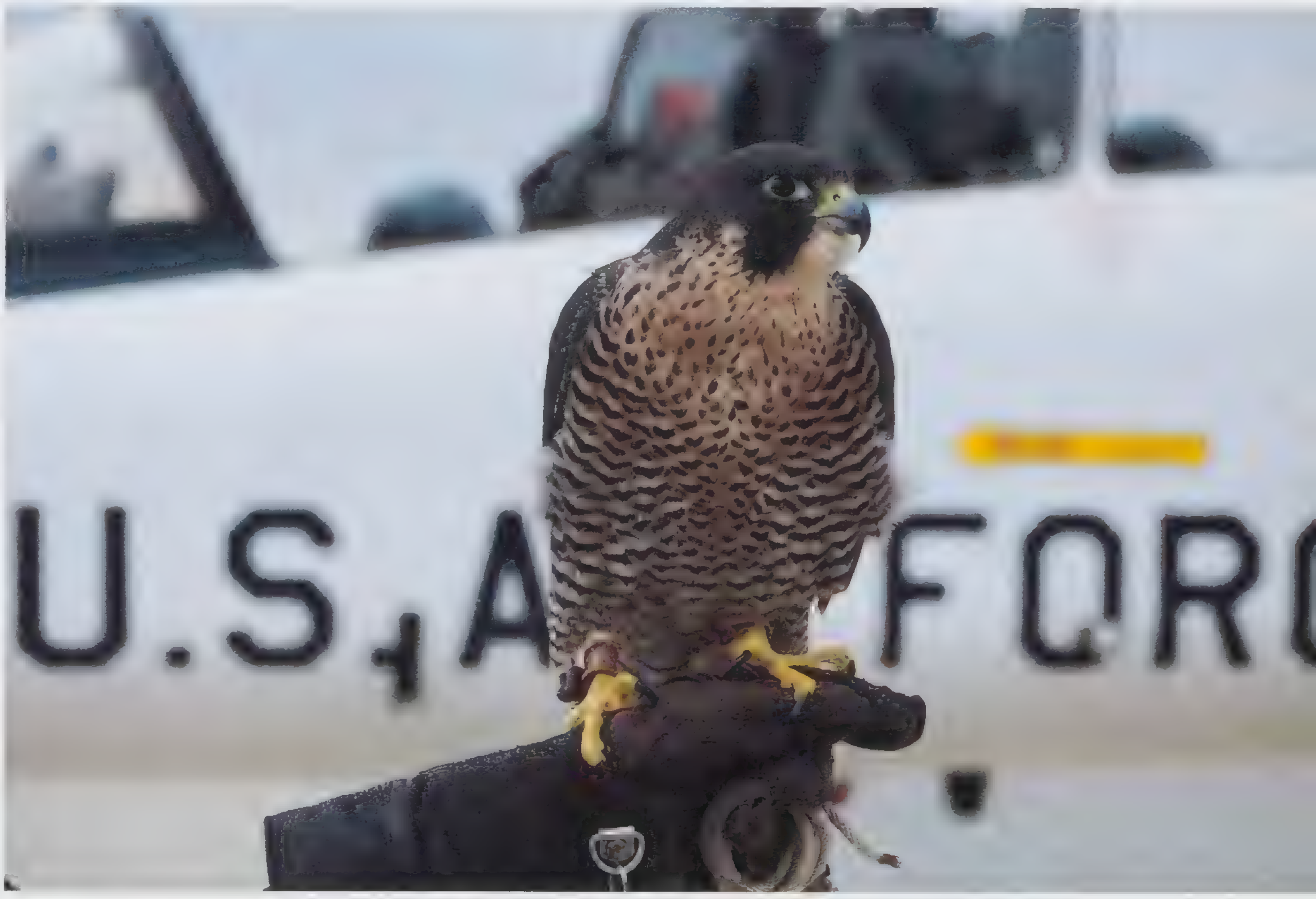
Sending planes only to places with few birds, by contrast, is a high-tech business. The Air Force is constructing what it calls a Bird Avoidance Model, or BAM—a computer modeling system that predicts where flying birds are likely to be most abundant.

According to Major Russell DeFusco, a biology instructor at the Air Force Academy and former chief of the BASH Team, the team began looking seriously at bird distributions in the early 1980s. Air Force biologists took information on waterfowl migration, compiled over decades by Illinois researcher Frank Bellrose, and drew routes heavily used by those birds on acetate overlays that could be placed over flight maps.

"It worked pretty well," DeFusco says, "but the scale was crude. It might only tell you that it was safer to fly in Minnesota one month than in Louisiana."

The researchers next mapped out migratory routes for species with fairly well-known flight patterns: Turkey Vultures, Broad-winged Hawks, Swainson's Hawks. But DeFusco wasn't satisfied. "We wanted to use historical data to predict possible collisions in the many places where species *weren't* being surveyed," he says.

DeFusco devoted his own Ph.D. research to developing a better technique. He chose to focus on Turkey Vultures, which alone account for 20 percent of the serious bird collisions with Air Force aircraft. "The question I asked was, can we use landscape features to predict whether turkey vultures should be there?" he says. "We took approximately 250 environmental variables—everything from vegetation, elevation, temperature, and snowfall—and overlaid those with Christmas Bird Count and Breeding Bird Survey data on a one-kilometer grid. We did an analysis to see which characteristics the birds were attracted to at the 2,200 or so sites for which we had survey information. Then we used those environmental characteristics to predict the abundance of Turkey Vultures in areas that had never been sampled."



The two basic strategies employed by the Bird Aircraft Strike Hazards (BASH) team to avoid collisions with birds are to fly airplanes only in areas with few birds or to attempt to scare birds away from landing strips. As part of this effort, researchers began flying trained Peregrine Falcons (above) and Harris' Hawks last fall at Scott Air Force Base in Illinois, hoping to discourage massive flocks of blackbirds from gathering there. The program's early results are promising.

REID ERICKSON

Fieldwork revealed that the model was accurate. By analyzing an area's environmental characteristics, DeFusco could predict where vultures would most likely be found, and where they would likely be absent. Flight planners have already begun using the information to plot B-1 bomber training routes in places with few vultures. Since then, the number of damaging bird strikes during low-level B-1 flights has fallen by about half.

Now, BASH Team researchers are using the same technique to predict abundances for about 80 species, of which roughly 50 are considered the greatest threats to aircraft. These are

The U.S. Air Force hopes to reduce its bird collision rate by 60 percent by the year 2000.

generally species that are large, fly in large flocks, or have high local concentrations. "Of course, every species is going to react differently to different environmental characteristics," DeFusco says, "so we're trying to find out how each one responds."

That work is slated to be completed in early 1998. When it is, Air Force flight planners will be able to use it to assess the probable safety of different routes and flight schedules. A flight scheduler on the Great Plains, for example, might use it to avoid likely concentrations of migrating geese; a planner in Texas might be able to avoid sending pilots to areas with high concentrations of soaring hawks and vultures. An Air Force spokesman says the force hopes to reduce its overall bird collision rate by about 60 percent by the year 2000.

But the BAM database will probably also have other applications of relevance to birds as well as pilots. DeFusco says the Air Force intends to make it available to researchers at other agencies, both public and private. How that will happen is not quite clear yet—he'd like to see an Internet site devoted to the database and perhaps a CD-ROM.

"The demand for this information is great," he says. "No one has attempted something like this on such a scale and at such resolution." He suggests that such a detailed model of land characteristics will be useful to a wide range of other researchers, such as those searching for a particular endangered species.

He also notes that the work may have international significance. An Israeli researcher is scheduled to begin working with the BASH Team soon. The Israeli Air Force has had a high rate of bird-aircraft collisions, because their country lies along a major migratory flyway.

Considering the information sources the model relies on, it's certainly appropriate that it receive some public use. The bird distribution data the BASH researchers are currently plugging into their computers come mainly from volunteer sources—from Christmas Bird Counts and Breeding Bird Surveys, from lists compiled by the Hawk Migration Association of North America, and from wildlife refuges. That such long-term data on bird populations exist—and that they may serve to make the skies a safer place for birds and people alike—is testimony to the dedication of generations of bird watchers. ■

Peter Friederici is a freelance writer and birder based in Tucson, Arizona.

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COURTSHIP TESTING

by Jack Connor

Do birds use courtship behaviors to evaluate the fitness of potential mates?

No bird behavior seems more romantic than courtship feeding. A male White-breasted Nuthatch carries a seed to his mate, who is waiting head down on the tree trunk. He lands close, hops a step closer, and offers it to her. Their heads tilt, their bills touch, and she accepts the gift, her wings fluttering. Anyone who can watch and not think of lovers kissing must be even older and crankier than I am.

Cardinals, chickadees, and crossbills follow a sequence very similar to nuthatches, tilting their heads and going bill-to-bill as a seed is passed from male to female. In Ospreys courtship feeding involves no billing and much more noise, but the themes are the same: the male finds food, carries it to the female while she watches and waits, and she takes it from him, apparently accepting him as her designated partner. Usually, the female Osprey waits in or near the nest site as the male circles above, pumping his wings and calling *eeeet-eeeet-eeeet!* while he shows her the fish. Often, she calls back until he descends and drops the fish at her feet. She seizes it with her big talons and mantles it with her wings. He lands next to her or directly on her back. Sometimes—though not always—they copulate while she grasps the fish.

Courtship feeding, most textbooks tell us, tests the male's fitness and ability to forage. The female needs assurance that the male will be a steady provider for her young. By giving her tidbit after tidbit for days or even weeks before she lays the eggs, he proves himself to her.

The practice seems confined to species in which males participate in parental care, such as Ospreys, nuthatches, cardinals, chickadees, and terns. Females of these species need the father's participation in parenting, especially in helping to feed the chicks. In species where fathers have no parental obligations—ducks, grouse, hummingbirds, and cowbirds, for example—males do not courtship feed.

So, at first glance, the practice seems easily explained. In species where females need dutiful partners, males can demonstrate their worth by participating in a kind of practice parenting. By withholding sex until the male has proven himself, the female protects herself against unworthy males and also gains some additional protein for building eggs. But, of course, in sex and courtship nothing is simple. Most behavior-watchers have probably witnessed incidents of courtship feeding that do not fit easy analysis.

Have you ever seen, for example, a male Osprey refuse to turn over to the female the fish he has caught and dangled above her? Instead of landing next to her or on her back after showing her his prize, he lands yards away—near enough so she can see the fish but far enough away so he can maintain distance from her. When she flies to him, he flaps off, taking the fish with him. One such chase I watched last spring lasted nearly an hour, with the male moving half a dozen times from spot to spot in the salt marsh as the female flew toward him. Twice she landed next to him and leaned close as if contemplating yanking the fish away, but he flew off each time. Finally, a trio of Fish Crows joined the chase, and the female Osprey managed to seize the fish when the male dropped it to go after the crows.

By the standard explanation of

DAVID G. ALLEN

Courtship feeding (as displayed here by two cardinals) is believed to test the male's fitness and ability to forage. But does this explanation really tell the whole story?

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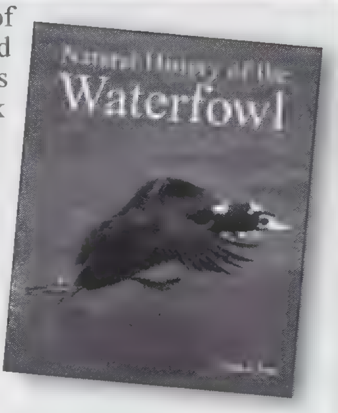
Natural History of the Waterfowl

by Frank S. Todd



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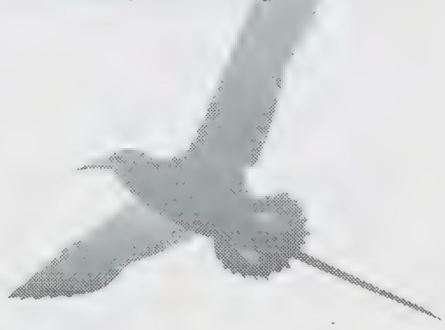

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Profile

ANOTHER NEOTROPICAL MIGRANT?

by Anne W. Semmes

Like the migratory birds he studies, famed biologist Chandler S. Robbins prefers to winter in Latin America

It was John Terborgh, ecologist and author of *Where Have All the Birds Gone?* who led me to Chan Robbins. "He was a great inspiration for me when I was in high school," Terborgh related. "He got me started on the route I've taken." Terborgh remembers well Robbins's enthusiasm, his encouragement.

The unfailing optimism, nonstop dedication, and humility of Chan Robbins are what linger after meeting and talking with him. I spoke with him recently in his office at the Patuxent Wildlife Research Center in Laurel, Maryland, where he serves as senior wildlife research biologist. I had caught him fresh from field research in eastern Guatemala, in the Cerro San Gil Reserve, one of that country's last undisturbed areas. For nearly 20 years, he has followed the movements of Neotropical migrants—birds that breed in North America but migrate south, spending the bulk of the year in Central or South America—basing his summer research in Maryland and spending winters taking biologists and students to tropical countries.

Robbins sees a growing interest in conservation in Guatemala. "The government wants its students to learn about ecology and bird populations," he said. He is currently providing field training for Guatemalans as part of a United States-Guatemalan effort to monitor breeding-bird populations in Central America, and he is impressed by the enthusiasm of his students.

In the many tropical countries where Robbins has worked, he's witnessed education programs for young children in action. "It's going to pay off," he said. He believes the popularity of television—now a presence in the most remote places thanks to portable sets—is making a substantial difference. "The great nature programs are big shows on TV, and kids love them. They're beginning to get a sense of the value of their wildlife."

After 51 years with the U.S. Fish and Wildlife Service, Robbins is still at the top of his game when it comes to studying the populations and habitat requirements of Neotropical migratory birds and discovering how habitat loss and forest fragmentation is driving their decline in numbers. He continues to believe that it is within our grasp to conserve our migratory birds in both their summer and winter habitats.

Robbins is nearly ecstatic over the potential of the Geographic Information System (GIS) as an aid for managing bird habitats. A Marylander since 1948, Robbins initiated a bird survey of 600 forests four years ago in Prince Georges County using the GIS, and this survey may become the model for bird study across the nation. Prince Georges County is, in his opinion, "perhaps the most covered, most surveyed, *most* heavily worked county in the United States. We have vegetation data for each site. The GIS can tell you where particular watersheds are located throughout the county. You can see ways to shape the forest fragments."

Robbins has played a major role in Maryland's efforts to set aside critical forest habitat. Because of forest loss and fragmentation, Maryland has suf-

ANNE W. SEMMES

For nearly 20 years, Chan Robbins has followed the movements of Neotropical migrants, spending summers doing bird research in Maryland and winters taking biologists and students to tropical countries.

fered severe declines in the numbers of its migratory birds. Beth Hartline is co-chair of Maryland's Wildlands Committee, an environmental group that initiated what became Maryland's Wildlands Preservation Act, setting aside thousands of acres of forested land in the state. She says that Robbins's quiet but forceful testimony about the effect of habitat loss on Neotropical migrants helped ensure the passage of the act. “He doesn't emphasize the importance of his role at all,” she said. “We are the people who consider him outstanding.”

Roger Tory Peterson once said of Robbins that he has the best bird-listening ears of any birder he knows.

It was 30 years ago, while people were first voicing concerns about how pesticide spraying was affecting bird populations, that Chan Robbins first conceived the idea of a breeding bird survey. Then a wildlife research biologist for the U.S. Fish and Wildlife Service Migratory Bird Population Station (now the Patuxent Environmental Science Center), Robbins quickly developed his idea into a program to obtain continental population data on breeding birds. That idea became the Breeding Bird Survey (BBS). Now, in late May and June each year, approximately 30 minutes before sunrise, some 4,000 BBS surveyors and assistants fan out across secondary roadsides in 50 states and Canada with route maps and recording sheets in hand.

From those first 50 field-tested roadside routes in Maryland and Delaware in 1965, the BBS has grown to 3,700 active routes with a reputation of being the single best model in the United States for monitoring birds, according to Russell Greenberg, director of the Smithsonian Migratory Bird Center. With a 30-year record of population trends for all bird species, data from the annual BBS are regularly used by government agencies to establish management priorities.

Fellow birders in the Maryland Ornithological Society (MOS) speak of Chan Robbins's willingness to share his knowledge and his patience as a teacher. But if you ask to accompany him on a May morning in Maryland on one of his six BBS routes, as I did, chances are he'll turn you down. Concentration is critical to catch every bird call on these three-minute counting sessions, even for a world-class listener such as Robbins. Roger Tory Peterson once said of Robbins that he has the best bird-listening ears of any birder he knows. Last year, Robbins began his survey of breeding birds in Guatemala, host to one of the largest numbers of wintering Neotropical migrants. In that country, the challenge of sorting out species in the cacophony of tropical bird calls is even greater than it is here. A team of two plus a tape recorder are BBS adaptations, along with five-minute instead of three-minute count stops. And, rather than using roadside routes, noted Robbins, observers walk transects through the forests.

It was Robbins, using data from the BBS, who first brought the marked decline of many of our eastern songbirds to the public eye in 1989. But from 1978 on, he's been forging trails throughout Central and South American countrysides, including the Caribbean, to search for the reasons behind their decline. A repeated finding is that a lack of forest, rather than forest fragmentation, is causing declines. “Some species don't use agricultural areas,” he said. The species that do generally favor citrus groves, cacao and mango plantations, pine plantations, coffee plantations, and rice fields.

Birders who are unaware of Robbins's pioneering research will recognize him as the primary author of the Golden Press *Field Guide to the Birds of North America,* published in 1966. This book was the first serious competition to the Peterson guide (first published in 1934) and it came to be known as the “Robbins Guide” by its devotees. An all-in-one guide to our birds with five million copies sold to date, it included a first-time feature: sonograms—graphic depictions of bird songs.

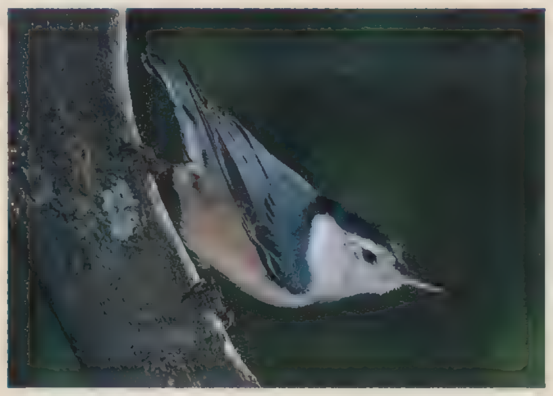
“Robbins wanted you to hear the songs in your head,” said Atlanta's Joseph Greenberg, father of biologist Russell Greenberg and a Harvard classmate of Robbins's. The elder Greenberg traces Robbins's special interest in bird sounds to a physics course Robbins took at Harvard, where he first got interested in the physics of sound. Greenberg, who birded once with Robbins in Maryland, brought his son Russell up on the “Robbins Guide.”

Robbins is editor of the newly published *Maryland Breeding Bird Atlas*—a version he considers more intensive than other state atlases. He continues to play a leading role in the Christmas Bird Count in Maryland's Ocean City. And in May, in addition to the BBS, there's the annual Robbins Birdathon, held on his home ground—his favorite birding place. The birds he most enjoys, he once said, are the ones he sees every day.

At last year's U.S. Fish and Wildlife Service 50th anniversary celebration for Robbins at Patuxent, he was presented with a watercolor of his favorite bird—a Winter Wren—with its bill agape in full song. The event, though remarkable for the number of Robbins's colleagues who came together for the salute, now seems only a ripple in an ever-widening career.

“I'm really excited by the future,” Robbins concluded at the celebration's end. A question I asked him at the end of our interview revealed the source of Robbins's optimism. When did he think our unsuspecting eastern birds would learn to identify and reject the alien cowbird eggs? “Give them time,” he said. “Eastern birds have only been exposed to cowbirds for a few decades!” Expect, he continued, some changes by way of natural selection over the next 1,000 years. Patience and perseverance are key. ■

Anne W. Semmes is a freelance writer based in Cos Cob, Connecticut. This is her first article for this magazine.



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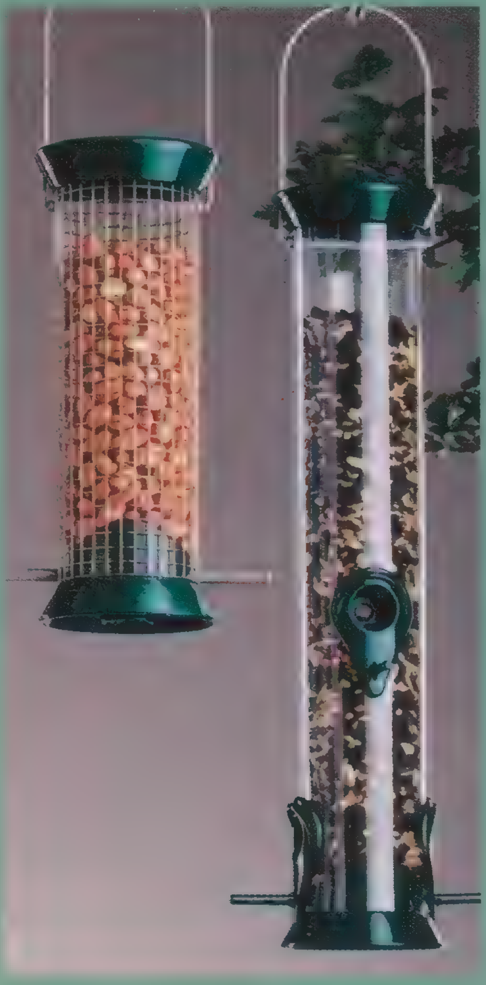

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The Catbird Seat

POLICING OURSELVES

By Pete Dunne

He was male, fiftyish, and obviously a professional—an average birder. He was standing at the door of the new Cape May Bird Observatory Research and Education Center and had plainly come "to get" the Northern Lapwing.

"Seen it?" I inquired.

"No," he said. "They say it disappeared this morning."

I covered my elation well. "That's too bad," I said, and I meant it. "*Thank God!*" I thought, and I meant this, too. With this bird gone, pastoral Goshen, New Jersey, could go back to the business of being tranquil. And I could stop worrying about a potential public relations nightmare.

Were the crowds of lapwing aspirants unruly? No, they were genial and orderly. But, the very fact that we birders are bereft of ill will often makes us blind to a big problem: other peoples' perceptions and other peoples' rights. As Justice Oliver Wendell Holmes might have put it: our freedom to swing our binoculars ends at the point of someone else's nose. There are a lot of noses out there, and some of them are long.

Here's an example. Last winter, a Lark Sparrow took up residence below a suburban bird feeder. The homeowner was comfortable with birders lining up to view the bird. An unconsulted neighbor across the street was not. One Sunday morning, while a van-load of birders viewed the bird from the street, the neighbor went ballistic, threatening legal action against *everyone* (including the neighbor and the hotline).

What was the guy's problem? His kids were afraid to go outside because of all the strange people. Forgive me if I'm reading too much into this, but maybe the guy was just looking forward to a little kid-free R&R on a peaceful Sunday morning.

Was the guy's reaction justified? Let's say yes. After all, he *was* the resident. He had moved to a quiet residential neighborhood, and the realtor had neglected to tell him that the neighborhood was a birding hotspot. (Before someone starts lecturing me about all the economic benefits of birding, let me point out that the guy didn't own a gas station, didn't own a convenience store, and didn't care. All he wanted was not to be inconvenienced at his home on a Sunday morning.)

ILLUSTRATION BY JEFF SIPPLE

Was the guy's reaction justified? Let's say no. Let's say that he (and his kids) just didn't understand the benign nature of birders. Then let's recall all the neat birds coming to the feeders of avid birders that get suppressed *precisely* because they want to avoid a siege.

At the recent American Birding Association convention, during the ethics committee meeting, I asked 400 birders whether they could identify the single most-often-voiced complaint leveled by Cape May residents at birders. Not surprisingly, none of them could.

Trespassing was suggested. So was pointing optics toward houses. So were crowds . . . early hours . . . and parking—which was close. But the correct answer is: stopping in the middle of the road to look at birds.

Don't tell me you haven't done it. You see a bird sitting on a wire and realize that the silhouette isn't familiar. You quickly look in the rearview mirror, find it clear, and then—swerving just a little to the right—you stop.

"WHEATEAR!"

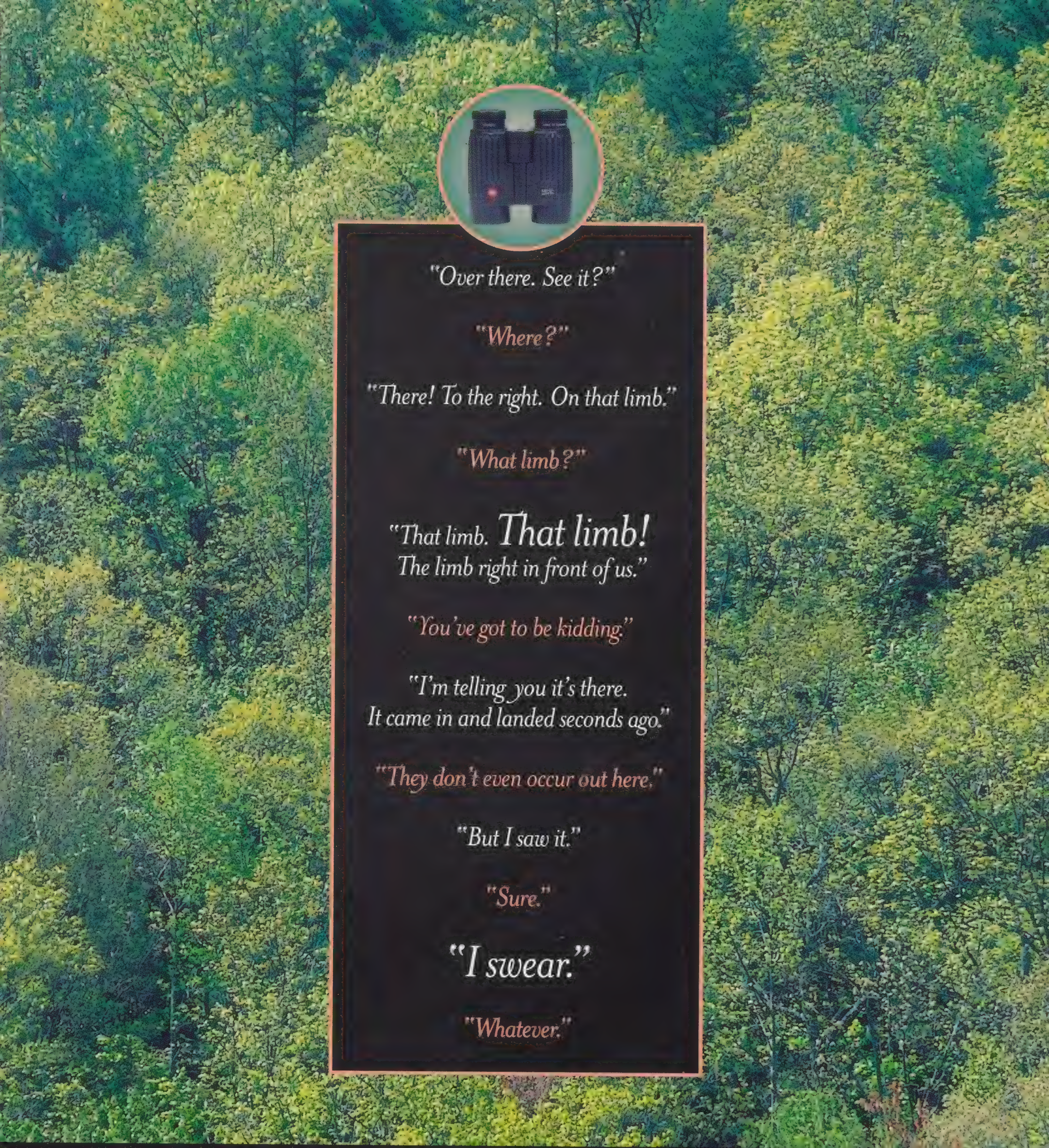
Time has a way of becoming suspended when you're looking at a neat bird—but only for those who are viewing it. In the minds of Cape May residents, whose passage down the road has been hampered or blocked, the element suspended is courtesy.

Now, I know that some readers might wonder why a fellow birder should be attacking other birders instead of defending them against such unwarranted public misconceptions. Well, I am defending birders—from ourselves—by pointing out some of the things we do that make us unwelcome.

Not long ago, on the Scilly Isles—a place famous for its avian vagrants (and hordes of twitchers)—an ordinance was drafted that pertained to "people wearing binoculars." The ordinance would limit the number of "persons wearing binoculars" who could assemble in a group, but it might just as easily have governed where, when, and how they could gather. Towns can do this.

So, how would you like to go to Cape May, New Jersey, (or Newburyport, Massachusetts, or Patagonia, Arizona, or . . .) and see a sign reading: "Attention Birders: Birding is permitted from 9:00 A.M. to 5:00 P.M. in designated areas only. Groups larger than 5 must obtain a permit from the county clerk. Office hours 10:00 A.M. to 2:00 P.M. Tuesday and Thursday. No loud talking."

If we, as birders, don't take pains to govern ourselves, then you can bet that other people will—people whose noses were pushed out of joint by nothing more than our unmindfulness. ■



"Over there. See it?"

"Where?"

"There! To the right. On that limb."

"What limb?"

"That limb. That limb!
The limb right in front of us."

"You've got to be kidding."

"I'm telling you it's there.
It came in and landed seconds ago."

"They don't even occur out here."

"But I saw it."

"Sure."

"I swear."

"Whatever."

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LIVING BIRD

AUTUMN 1997 VOLUME 16 NUMBER 4

GREETINGS FROM SAPSUCKER WOODS

When Lab founder Arthur A. Allen first traveled to Churchill, Manitoba, in the 1930s, he was amazed how accessible the arctic birds of the area were for researchers and photographers. A railroad had recently been completed, leading from Winnipeg in southern Manitoba all the way to the docks at Churchill, which allowed the province's massive grain crop to be shipped directly to Europe by sea via Hudson Bay.

But the railroad was also a boon to scientists like Allen. "It was the open sesame to a new fauna," he wrote. "Naturalists at last could get to the nesting ground of the Golden Plover, the Stilt Sandpiper, the Parasitic Jaeger, and the Harris' Sparrow with a minimum of effort. They might have to walk only five or ten miles to find these birds."

Only five or ten miles. I love that last line. Imagine slogging five or ten miles across wet, spongy tundra, being eaten alive by mosquitoes and black flies, while carrying a backbreaking load of camera equipment—the kind of equipment that makes our modern camera gear seem featherweight by comparison. It was grueling work, and yet it was well worth the effort to study and photograph the remarkable birds of the Churchill area. And it's still worth it.

I recently traveled there to gather information and take pictures for an article on Churchill, which appears on page 8 of this issue. It was an amazing experience following in Arthur Allen's footsteps, so many years after he had gone to Churchill. It's much easier to get around now. Gravel roads lead to many areas that were nearly inaccessible in his time, and you can rent a car or van to transport your equipment to the field. Seeing Churchill myself and imagining what it must have been like in the 1930s and 1940s has only made me that much more impressed with all that Arthur Allen was able to achieve as a pioneer of bird photography.

— *Tim Gallagher*
Editor-in-Chief

Cover: An immature Cooper's Hawk sits transfixed as it bathes in a waterhole in Texas. Photographer Steve Bentsen sat for hours in a blind to capture this amazing image. The Cooper's Hawk is one of the woodland birds being studied by an army of citizen scientists participating in the Lab's Birds in Forested Landscapes project. See article on page 28.

Right: Churchill, Manitoba, is a great place to observe breeding shorebirds, such as this stunning Hudsonian Godwit. Read more about this top subarctic birding hotspot on page 8. Photograph by Tim Gallagher.

Back Cover: The warm light of an early autumn afternoon gently illuminates the subtle beauty of this fall-plumage Yellow-rumped Warbler. Photograph by Bob MacDonnell.

8 BIRDING AT THE EDGE OF THE ARCTIC
by Tim Gallagher
At the far northern reaches of Manitoba, Churchill beckons to birders from around the globe.

18 LYNNE CHERRY'S JOURNEY *by Rachel Dickinson*
Insatiable curiosity, dedication to environmental activism, and artistic talent have placed this gifted author and illustrator at the forefront of children's literature.

22 TURNING WASTEWATER INTO WETLANDS
by Marcia Bonta
The manmade wetlands of Hornsby Bend provide prime habitat for waterfowl, shorebirds, and other migrants, as well as an excellent environmental education facility for inner-city youths.

28 INTO THE WOODS *by Leslie Intemann*
Through the Lab's Birds in Forested Landscapes program, participants learn the finer points of bird study while gathering important scientific data on woodland thrushes and raptors.

Departments

4 LETTERS
5 BIRDNEWS

Columns

6 SPOTLIGHT *by David S. Wilcove*
A Tale of Two Curlews

35 PICTURE PERFECT *by Tim Gallagher*
Shorebirds: a Photographer's Dream

38 THE CATBIRD SEAT *by Pete Dunne*
Nosing Out an Identification

LIVING BIRD

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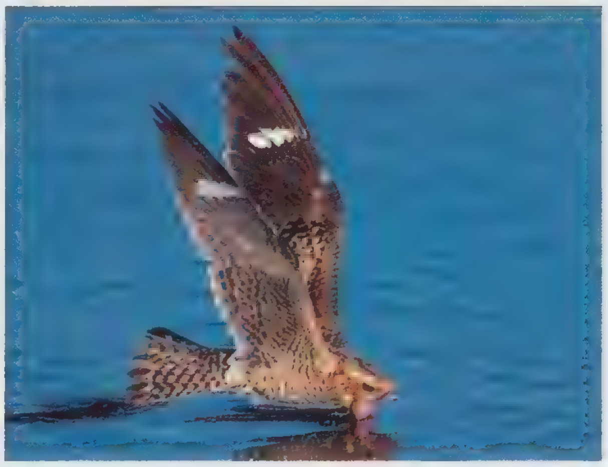
Letters



TOM VEZO

COMMON OR LESSER?

I saw a copy of the Spring '97 issue of *Living Bird* in a dentist office, and I was very impressed with the magazine. I have one question though: Are you positive that the bird in the lower lefthand corner of page 20 is a Common Nighthawk? It looks like a Lesser Nighthawk to me. Could it be that the experts at the Lab made a mistake?

Ed Fischer
Los Angeles, California

The all-too-human "experts" at the Lab can (and do) make mistakes, but this is not one of them. This superb photograph allows us to examine characters that normally cannot be seen in the field and that clinch the identification of the bird in question as a Common Nighthawk. The key to distinguishing between the two species is the white bar in the wing. According to field guides, Lesser Nighthawks have the bar closer to the tip of the wing than do Common Nighthawks. You could try to rely on your subjective impression of just where the bar lies, or you can measure it in the photograph (compensating for the apparent angle of the wing in the photograph). If you do that, you will find that the bar starts nearly at the exact middle of the wing, suggesting Common Nighthawk.

*With such a good photograph, however, we can do even better than that. If you go beyond the field guides you can find literature on identifying birds in the hand—much of it written during the 19th century when most ornithologists birded with a gun. These works describe many useful characters that often are nearly impossible to distinguish in the field but that eliminate any doubts in identification. In one of them—*The Birds of North and Middle America, Part VI*, published in 1914—Robert Ridgway provides the following information about the two nighthawks: In Lessers, the outermost (10th) primary usually is shorter than the 9th, while in Commons the 10th is usually longest; the white patch occupies the five outer primaries in Common, but only four in Lessers; and the patch in Common is anterior (more toward the wrist) to the tip of the fourth quill (7th from the outside), while it is usually opposite the tip of the fifth quill (6th from the outside) in Lessers.*

The photograph is inconclusive on the first character: on the left wing the 10th looks longest, whereas on the right they look the same length. The next two characters, however, clearly indicate the bird in question is a Common Nighthawk. A check of the series of specimens of the two species in the Cornell Vertebrate Collections confirmed the validity of Ridgway's statements.

— Kevin J. McGowan
Technical Editor

MANY THANKS

Thanks for the great Summer 1997 issue of *Living Bird*. The photographs of rails taken by William Burt were outstanding. The article on the Civil War and birding in Virginia was very good, especially since it led off with Sam Abell's picture of Appomattox in fall foliage—the best photograph I've seen of Appomattox. The article on birds and aircraft highlights a problem we are having in New York City, where gulls are being shot at John F. Kennedy Airport, despite the outcry from birders. All in all, this was one of the best issues I have received.

Eugene Polgar
Maspeth, New York

We welcome letters from readers. Write to The Editors, *Living Bird*, 159 Sapsucker Woods Road, Ithaca, New York 14850, or send e-mail to <livingbird@cornell.edu>.

In Memoriam

Two friends who changed our lives

In June of 1986, life at the Lab of Ornithology changed for the better. Bob Nagler and John Sherwood, gentlemen from opposite shores of the continent, dropped by for a visit. Both were Cornell graduates, both were semiretired, and both loved birds.

The first to visit was Bob Nagler. Arriving with a brown bag clutched under his right arm, Bob formally introduced himself as a businessman with a latent but lifelong interest in birds. He was proud of his Cornell bird heritage and anxious to engage with the university once again. In the bag was a Common Goldeneye decoy, a recently acquired treasure, destined to become the masthead of his comfortable Long Island home, "Goldeneye" by name. Bob's eagerness to learn about birds was only surpassed by his eagerness to become involved with the Lab. He joined our Administrative Board in 1987, founded and spearheaded the Chairman's Council, led the Lab through an extremely successful capital campaign during which time we endowed four professorships, and helped in innumerable ways with Lab business. From that first, brown-bag meeting until his death this past July, Bob was unfailingly dedicated to the Lab. The Lab did well by Bob's leadership, dry humor, and business and fund-raising savvy.

JON REIS (2)

Robert Nagler (1927-1997)

John Sherwood (1929-1997)

The second to visit the Lab that June of 1986 was John Sherwood. One afternoon he eased into my office unannounced and matter-of-factly introduced himself as one of a team of birders from Palo Alto, California. The other team member was his wife, Carolyn. We got right down to business, talking birds. John shared his observations of several recent birding forays in the San Francisco area. This drop-in visit launched a journey of friendship and collegial camaraderie between John and the Lab. He joined our Administrative Board in 1987, accepted the position of development committee chairman, coordinated several Lab events in California, and enthusiastically tackled any assignment to help the Lab. John and Carolyn availed their home as a West Coast base of Lab operations from which John capably assisted with the Lab's fund-raising endeavors.

At the heart of Bob's and John's activities with the Lab was a deep-seated passion for birds. Throughout their Lab tenure they gave unselfishly of themselves, first as acquaintances and later as close friends, never losing sight of our mission and never passing up a good birding adventure. Birds heightened their outlook on life; they enriched ours.

— Scott Sutcliffe
Associate Director

Hawaiian Crow Update

Researchers working to increase the tiny population of the endangered Hawaiian Crow, or 'Alala, have reason to celebrate. This year, nine chicks were raised in captivity at facilities in Hawaii—a whopping boost for a species with a total known wild population of only 15 individuals.

"We are extremely pleased with this year's 'Alala production," says William A. Burnham, president of The Peregrine Fund, which operates the two captive breeding facilities. "We're making great progress with the captive flock, and this year's record of five fertile pairs, several of which had never bred successfully before, puts the restoration effort on a more optimistic track." Three of the females that produced eggs this year were raised by The Peregrine Fund from eggs removed from the wild in 1993 and 1994.

Of the new chicks, seven were hatched on the island of Maui at the Maui Bird Conservation Center—which is owned by Hawaii's Department of Land and Natural Resources and operated by The Peregrine Fund. Three chicks were also hatched at The Peregrine Fund's Keauhou Bird Conservation Center on the Big Island, but one of these young crows died of a yolk sac infection.

The 'Alala Management Program began in 1993, and since then 16 young have been released into the wild, 10 of which still survive. This past spring, one of the released birds—a female called Hiwa Hiwa—formed a pair bond with a wild male. Though the birds did not produce any eggs this year, researchers are hopeful about the future success of this pair. "Hiwa Hiwa was the first chick hatched by The Peregrine Fund on the Big Island in 1993 and the first to venture into the wild from our aviary," says Burnham. "Perhaps next year she'll be the first captive-raised 'Alala to nest in the wild."

Spotlight

A TALE OF TWO CURLEWS

by David S. Wilcove

The Bristle-thighed Curlew and the Whimbrel may look alike, but they are worlds apart ecologically

Appearances can be deceiving—a truism all too familiar to most bird watchers. In the field, a Whimbrel and a Bristle-thighed Curlew look pretty much the same. The Bristle-thighed Curlew is a little browner and, if you look closely, it does have some long, stiff feathers near the base of its legs that are missing on a Whimbrel. But these are truly minor differences: line up a dozen Whimbrels and a dozen Bristle-thighed Curlews and there probably aren't more than a handful of bird watchers who could tell them apart at 50 feet. But ecologically, these two closely related species are remarkably different.

Whereas Whimbrels breed across the Arctic from Canada to Scandinavia to Siberia, Bristle-thighed Curlews are known to breed in only two locations in western Alaska. A nest of the species was not discovered until June 12, 1948, when Henry Kyllingstad and his young son found one, after four years of searching, making this species one of the last North American birds to have its nest described. And whereas Whimbrels winter along the continental coastlines from Oregon and North Carolina to Tierra del Fuego and from southern Europe to South Africa, Bristle-thighed Curlews wing their way to the South Pacific, spreading out among numerous islands and atolls stretching from the Hawaiian Islands to the Tuamotu Archipelago. This species is, in fact, the only migratory shorebird that winters exclusively on oceanic islands.

The Whimbrel, in short, is a wide-ranging shorebird with a global population that must easily number in the hundreds of thousands. The Bristle-thighed Curlew, in contrast, is a very localized species with a total population of probably fewer than 10,000 individuals. It would be fascinating to know how and when the Bristle-thighed Curlew lineage split from the Whimbrel, but, to the best of my knowledge, no one has attempted such a study.

Because Bristle-thighed Curlews are almost never spotted along the Pacific Coast south of Alaska, ornithologists believe they fly nonstop from western Alaska at least as far as Hawaii—a distance of approximately 2,500 miles. And because 2,500 miles is near the theoretical limit for nonstop flight for a curlew-sized bird, biologists long assumed that the Hawaiian Islands functioned as a rest stop for bristle-thighs en route to other islands in the South Pacific. When ornithologist Jeff Marks began banding curlews on Laysan and Midway islands (at the western end of the Hawaiian Archipelago) in the late 1980s, however, he made a surprising discovery: most of the curlews he banded spent the entire winter in Hawaii. Laysan and Midway were endpoints, not stopover sites. That meant that the Bristle-thighed Curlews wintering farther south had to be passing over Hawaii en route to other islands. Yet, the next closest islands are the Line Islands and Marshall Islands, more than 1,200 miles south of Hawaii. To reach them, curlews departing Alaska must fly nonstop for at least 3,700 miles—far beyond what many ornithologists had thought was physically possible. To make it that far, Marks believes that the curlews sample the air column in search of favorable tailwinds prior to heading south.

Once they reach their wintering grounds, bristle-thighs hardly behave like Whimbrels or any other shorebird for that matter. They are avid consumers of bird eggs, taking advantage of the multitude of nesting shearwaters, petrels, and terns that inhabit many of the Pacific islands. Typically, the bristle-thighs either peck open the eggs or pick them up in their bills and throw them to the ground. But to crack open the larger, thicker eggs of albatrosses, bristle-thighs will pick up small pieces of coral and hurl them at the eggs—a rare example of avian tool use and the only known case of tool use by a shorebird.

Finally, like many migratory shorebirds, Bristle-thighed Curlews molt their flight feathers on their wintering grounds, after they have completed their fall flight. Unlike any other shorebirds, however, many bristle-thighs undergo such a rapid molt of their flight feathers that they become temporarily flightless.

Why they undertake such a rapid molt remains something of a mystery, but Marks has hypothesized that it is an adaptation to the rigors of their migration and the nature of their wintering grounds. Most wintering shorebirds build up large fat reserves in the month or so before they head north for the spring. But food tends to be scarce on oceanic islands, and bristle-thighs cannot count on gaining enough fat in the weeks preceding their migration to make it all the way back to Alaska. Hence, they must build up their fat reserves over the course of the entire winter. Growing new flight feathers requires a great deal of energy, so it is advantageous for the curlews to finish that task as quickly as possible to allow them enough time to store up fat for their northward migration. If food on the oceanic islands is most abundant in the fall—and there is apparently some evidence to this effect—then it makes sense for the curlews to compress their molt into a short time period.

For shorebirds wintering on the mainland, a period of flightlessness would likely prove fatal, given the numerous ground-dwelling predators that stalk them. But the Pacific islands where the bristle-thighs winter are (or were) predator free. Most, like Hawaii, harbor no native mammals save for an occasional bat. Monkeys, mongooses, foxes, cats, and dogs are generally nonexistent. The payoff to the curlews for traveling to such remote places, then, is the chance to spend the winter in comparative safety. And it works, sort of: a Bristle-thighed Curlew shot on Laysan Island was found to be more than 23 years old—a record for a North American shorebird. Unfortunately for the Bristle-thighed Curlew, humans have colonized many of the islands within its wintering range. Ornithologists believe the bird has been extirpated from many of the places where it historically wintered, either because people hunted it to excess or because they released predators, such as the aforementioned dogs, cats, and mongooses. The curlews, for example, no longer winter in significant numbers on the main Hawaiian Islands—which are now replete with introduced predators—choosing instead the safer Leeward Islands, such as Laysan and Midway. Yet, fossil remains indicate that the species was once far more numerous on the main islands, long before the arrival of European settlers.

Bristle-thighed Curlews fly across thousands of miles of open ocean each year as they migrate from nesting grounds in Alaska to wintering areas on South Sea islands and back again.

LON E. LAUBER

In its own quirky way, the Bristle-thighed Curlew demonstrates a well-established phenomenon. Flightlessness among birds tends to evolve in island settings, where the need to disperse is gone and the dangers from ground predators are greatly reduced. But flightlessness also makes a bird extremely vulnerable to introduced predators. For example, based on fossil evidence, it seems likely that virtually every island of any size in the South Pacific at one time harbored a flightless rail or two. The Hawaiian Islands, with their rich array of habitats, contained not only their fair share of flightless rails, but also flightless ibises and geese. Even tiny Laysan Island, where Marks undertook his study of Bristle-thighed Curlews, was once home to a remarkably tame, flightless rail. Virtually all of these rails, including the Laysan Rail, are gone now, victims of humans and their "companion" animals. By one estimate, as many as 2,000 species of birds were driven to extinction in the South Pacific when those islands were colonized by humans hundreds, even thousands, of years ago.

We tend to think of habitat destruction as the overriding threat to our birdlife, and it is. But alien species—especially on islands—run a close second. Nearly half of the plants and animals on the U.S. Endangered Species List are threatened at least in part by alien species. In the Hawaiian Islands, nearly 100 percent of the imperiled species are endangered by introduced species. And the situation keeps getting worse instead of better.

The Bristle-thighed Curlew has long been near the top of my "most wanted" list. When I had finally accumulated enough frequent-flyer miles, I cashed them in for a ticket to Alaska. My plan was to fly to Nome, rent a pickup, and search the tundra for curlews. When an emergency at work forced me to cancel my trip at the last minute, I reluctantly traded my summer ticket to Alaska for a winter ticket to Hawaii. At least the weather would be better and the mosquitoes fewer, I reasoned. Eight months later, I found myself at a little airport on Kauai, staring at—of all things—a Bristle-thighed Curlew, as it strolled through the grass bordering the runway. Through my telescope I marveled at how closely it resembled a Whimbrel. Similar, yes, but *vive la difference!* ■

Recommended Reading

Marks, Jeffrey S., and Roland L. Redmond. Conservation problems and research needs for Bristle-thighed Curlews *Numenius tahitiensis* on their wintering grounds. *Bird Conservation International,* vol. 4, pp. 329-341; 1994.

Marks, Jeffrey S. 1996. Bristle-thighed Curlew. *World Birdwatch,* vol. 18 (2), pp. 20-21; 1996.

BIRDING AT THE EDGE *of* THE ARCTIC

TEXT AND PHOTOGRAPHS BY TIM GALLAGHER

At the far northern reaches of Manitoba, Churchill beckons to birders from around the globe

Churchill, Manitoba, has a lot of character. How many other places can you think of that have a polar bear alert system set up to warn residents whenever one these huge carnivores comes lumbering through town? But if you go there looking for something charming or quaint like a Cape May of the North, forget it. Perched at the western edge of Hudson Bay, Churchill is a drab, dusty, treeless frontier outpost alongside a vast wilderness of tundra, boreal forest, muskeg bogs, and lakes, stretching for thousands of miles across the north of the continent. Fewer than 2,000 people live there, and that's in the peak season. A narrow strip of asphalt lined with a few shops, motels, and a gas station makes up the main road. Local residents of all ages ride all-terrain vehicles up and down the wide expanse of dirt on either side of the road, kicking up clouds of dust as they go. (One day I saw an entire Inuit family blast by on one of these tiny vehicles, with small kids clinging precariously to the luggage racks.) But Churchill has great charm for those with an eye for the muted beauty of the tundra—and especially for people who appreciate seeing arctic wildlife up close.

Though Churchill is a considerable distance south of the Arctic Circle,

One of the world's most beautiful shorebirds, the American Golden-Plover is a common breeder each summer on the tundra near Churchill. These strikingly marked birds spend most of the year in South America, returning to the far north only to rear young.

the frigid winds that blow across the ice-covered bay have created a tundra habitat much like that found far to the north. It is a harsh, flat, unprotected place, where hunting jaegers cruise constantly, searching for unattended goslings and other young birds to devour. But if you travel a few miles inland, you'll enter a transition zone where tundra meets boreal forest, creating a rich mixture of plants and animals.

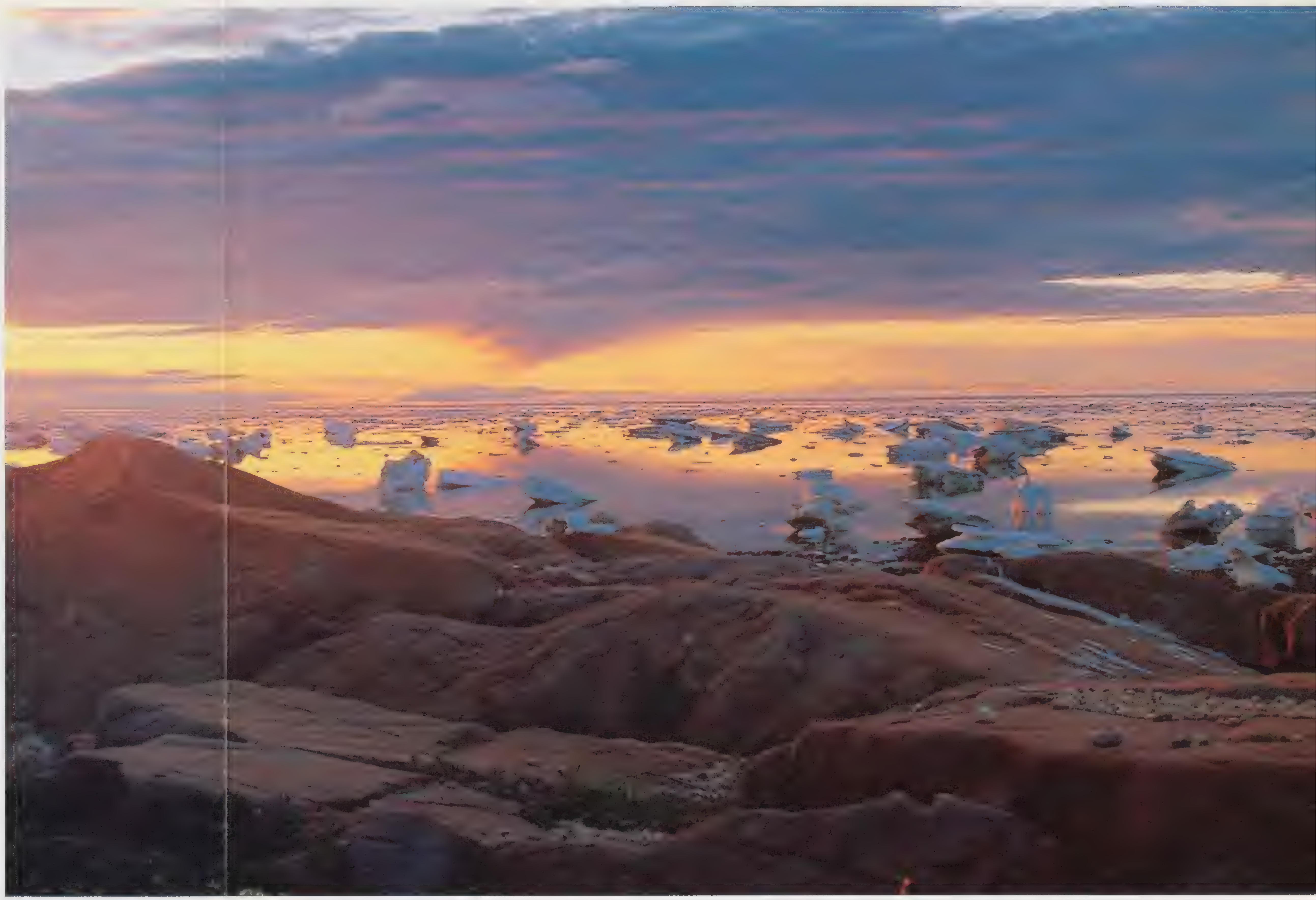
Here the usually drab, gray Short-billed Dowitchers assume the stunning cinnamon colors of their nuptial garb.

The mosquitoes and black flies of the Churchill tundra are legendary, coming out in massive, buzzing hordes whenever the wind dies down and the temperature warms up. During a recent trip there, I rarely went out on the tundra without full battle gear—headnet, long-sleeved fleece jacket, gloves, and chest waders—no matter how warm it got. (I also doused myself liberally with insect repellent.) But I don't begrudge the presence of bugs. They are a major attraction for migratory birds, some of which travel from as far away as South America to partake in this brief insect feast.

Few places are better than the Churchill area for observing nesting shorebirds in the full splendor of their breeding plumages. Here the usually drab, gray Short-billed Dowitchers assume the stunning cinnamon colors of their nuptial garb and American Golden-Plovers sport their coal black breasts and backs of gold—the most beautiful shorebird plumage I've ever seen. Though many migrants arrive at or pass through the Churchill area in May, June through early July is probably the best time for birders to visit. During that brief window you can find the nesting shorebirds I mentioned above, along with Whimbrels, Hudsonian Godwits, Stilt Sandpipers, Pacific Loons, Bonaparte's Gulls, Smith's Longspurs, and more. You may even see a rare Ross' Gull—a Churchill specialty.

For the birds nesting near Churchill, the breeding season is brief and intense. The birds arrive en masse. They mate, lay eggs, and raise young—and then they depart. By mid-July, most adult male shorebirds have already left.

I spent the last 10 days of June in Churchill this past summer, and it was a great time to be there, witnessing the amazingly compressed change of season. When I got there, the weather was uncomfortably cold, and the Churchill River was still choked with ice. By the time I left, the days were pleasant (for the most part), wildflowers were blooming, and the river was ice free, allowing easy passage for beluga whales.



Short-billed Dowitchers (at left) are fairly easy to find, both on the tundra and at the granary ponds just outside of town. Summer comes late to Churchill and lingers briefly. Even in late June, Hudson Bay is usually still covered with huge icebergs (above).

From a bird photographer's standpoint, Churchill is outstanding. Within easy walking distance of the town center—right behind the huge granary—lie a series of ponds that attract a variety of interesting and highly photogenic birds. During my recent stay at Churchill, I took pictures at the ponds almost every day, usually in late afternoon and early evening. As I sat, usually without a blind, at the water's edge, Stilt Sandpipers, Lesser Yellowlegs, Short-billed Dowitchers, and Hudsonian Godwits strode boldly past, within easy full-frame range of my 500mm lens. Tiny Red-necked Phalaropes spun in the shallows, stirring up food, Arctic Terns landed on rocks and driftwood nearby, interacting noisily with others of their kind, and various ducks—Greater Scaups, Northern Shovelers, Gadwalls, American Wigeons, Northern Pintails, and more—swam past or stood preening, only yards away. (These ponds are also one of the best places to catch a glimpse of or photograph a Ross' Gull.)

I think if I'd spent my entire trip taking pictures only at the granary ponds, I would still have come back with an impressive number of bird images. I chose instead to explore the area more fully, driving up Goose Creek Road and the Hydro Road as far as the pump station, around Cape Merry, along the coast of Hudson Bay to Bird Cove, and inland to Twin Lakes—an area of taiga (boreal forest), covered with stunted spruce. I had hoped to photograph a pair of Three-toed Woodpeckers

I had hoped to photograph a pair of Three-toed Woodpeckers that were nesting near Twin Lakes, but a forest fire destroyed the nest area.

that were nesting near Twin Lakes, but a massive forest fire—which I'd seen from the airplane as I flew to Churchill—destroyed the nest area. Flames flew high into the sky and trees exploded as the fire raged. Apparently ignited by a spark from a chain saw, the fire devastated a huge area of forest. But a few days later, as I visited the site, I saw several Gray Jays foraging in the scorched forest. Fortunately, the forest fire should ultimately prove beneficial for the local Three-toed and Black-backed woodpeckers, which thrive in burned areas.

This past spring was unusually dry in Churchill, so when a fire broke out in the boreal forest near Twin Lakes (above left), it spread rapidly and burned for several days. One of the area's more interesting passerines, a Smith's Longspur (at left) carries food back to its young. These birds generally nest on the open tundra or in damp meadows with raised tussocks.

The human history of Churchill and the surrounding area is fascinating. For centuries, Hudson Bay has lured people to test its waters and explore its rugged coast. Native Americans, the Pre-Dorsets, hunted and fished there some 3,000 years ago, followed through the millennia by the Dorsets and then the Inuits, Chippewas, and Crees. Europeans came much later, in the early 1600s, searching for the elusive Northwest Passage. But Hudson Bay was harsh to the first wave of European explorers. Even Henry Hudson, the bay's namesake, fell victim to the place. In the spring of 1611, after enduring a frigid winter with their ship stuck in the ice, his crew rebelled. Hudson was set adrift in a small sloop, *Mutiny on the Bounty*-style, with his son and some other crewmen who refused to take part in the mutiny. But unlike Captain Bligh, Hudson and his men did not make a fantastic open-boat journey across thousands of miles of sea and reach a British outpost as heroes. Instead, they drifted off into the subarctic bleakness, never to be heard from again.

Jens Munk, a 17th-century explorer from Denmark and the first European to land at what is now Churchill, fared only marginally better than Hudson. After a bone-chilling winter camped on the shores of the Churchill River, most of his crew of 65 men who had sailed the two ships, the *Unicorn* and the *Lamprey*, to the New World had perished. At his bleakest moment, in April of 1620, Munk wrote in his journal: "Inasmuch as I have now no more hope of life in this world, I request, for the sake of God, if any Christian should happen to come here, that they will bury in the earth my poor body, together with the others which are found here, expecting their reward from God in heaven; and furthermore that this my journal may be forwarded to my most gracious Lord and King in order that my poor wife and children may obtain some benefit from my great distress and miserable death. Herewith, good night to all the world; and my soul into the hand of God."

But the frigid weather finally broke, and Munk and the other two gaunt survivors emerged from their shelters and began eating whatever newly sprouted plants, fish, and birds they could find, gradually restoring their strength. (It was at this time that Munk compiled the area's first bird list, noting the return dates for eight migratory species.) On June 16, these three desperate and determined men began a miraculous journey, sailing through freezing weather, fog, and icebergs across the bay, and then over the Atlantic all the way to Denmark, in a ship that should have been manned by a crew of at least 16.

One of the most interesting human-built structures at Churchill is Fort Prince of Wales, a star-shaped, 300-square-foot, stone fortress

Fort Prince of Wales (above) looks imposing as it guards the mouth of the Churchill River. But the only time it was ever attacked—in August of 1782—the British defenders were so outnumbered by the French attackers that they immediately surrendered.

BHL

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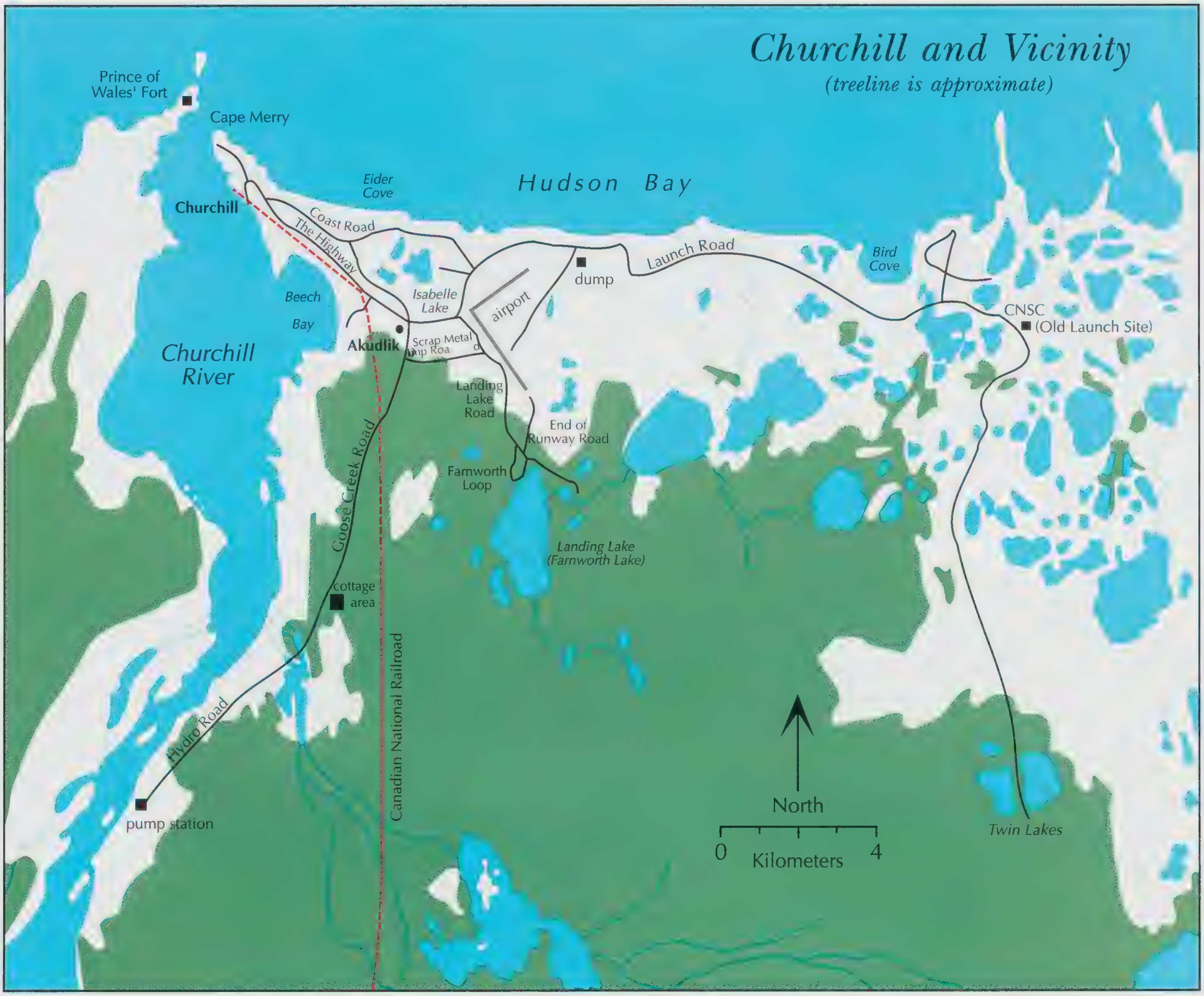


MAP BY CINDY LIPPINCOTT/COURTESY AMERICAN BIRDING ASSOCIATION

built by the Hudson's Bay Company to guard the mouth of the Churchill River. The fort is on the other side of the river from the town and is only accessible by boat, but it's well worth visiting. This unique, low-lying fort was completed in 1771 after 40 years of construction. The company also built two smaller gun emplacements, one farther up the river on the same side as the fort and the other directly across the river from the fort. The fort and the smaller batteries were meant to protect the Hudson's Bay Company's fur-trading empire from competing enterprises.

Unfortunately, in August of 1782, the first and only time the fort came under attack, the defenders were completely outmanned and outgunned. Three French warships—a seventy-four gunner and two thirty-six gunners—landed several hundred armed troops near the fort, under cover of darkness. The entire force at Fort Prince of Wales numbered only 39 men. As the sun rose over the horizon, young Samuel Hearne, the fort's commander, took one look at the ships' cannons aimed at the walls and the numerous armed men gathered below and immediately ran up the white flag. I guess he took to heart the advice of Shakespeare's Falstaff: "The better part of valor is discretion."

More recently, in the early 1930s, Churchill became a seaport—the only one in subarctic Canada. There, wheat from the southern prairies of Manitoba is brought by train to the port, where ships are loaded to take the grain to Europe. But the shipping season is short—four months at the most—and then the bay and the river ice over again and the port shuts down. Churchill has come to depend more and more on tourism to stay economically viable. People from all over the world come to Churchill each year to see polar bears, which have become the area's star attraction. Several companies take sightseers out in massive "Tundra Buggies" to look at bears. But though Churchill has been dubbed the "Polar Bear Capital of

The tiny train station at Churchill (above) is a welcome sight to rail travelers who have just made the grueling 38-hour trip from Winnipeg in southern Manitoba.

the World" by the local chamber of commerce, it's rare to see a bear during the peak birding season. Bears start to appear in late summer as the ice departs from the bay and stay through November when the ice reforms. When the bay is frozen, the enormous animals spend most of their time out on the ice, hunting for seals. It's fine with me that the bear and bird seasons don't coincide. I don't cherish the idea of running into a polar bear when I'm out photographing birds. I also wouldn't like to be in Churchill when it's packed with tourists. During the bird-nesting season, the place is pretty quiet.

Churchill is inaccessible by automobile. To get there, you must travel either by airplane or train—a 38-hour ride from Winnipeg. This is one of the last great wilderness train rides in North America and is a fascinating journey, if you have the time and endurance to enjoy it. Some people opt to drive all the way north to Thompson, Manitoba, and take a train from there, though it's still a long haul to get to Churchill. But you do have a chance of spotting some interesting birds such as Northern Hawk Owls and Great Gray Owls on the way.

If you're visiting Churchill for the first time, consider taking a specialty tour. It's difficult to find the best birding locales yourself, and it's expensive to rent a vehicle there. But if you don't like organized tours, another option is to visit Churchill by yourself (or with friends who will split the cost of a van rental) and follow the directions in Bonnie Chartier's excellent book, *A Birder's Guide to Churchill,*

INFORMATION AND TOURS

Chamber of Commerce (tourist information)—P.O. Box 176, Churchill, Manitoba, Canada R0B 0E0; (204) 675-2022.

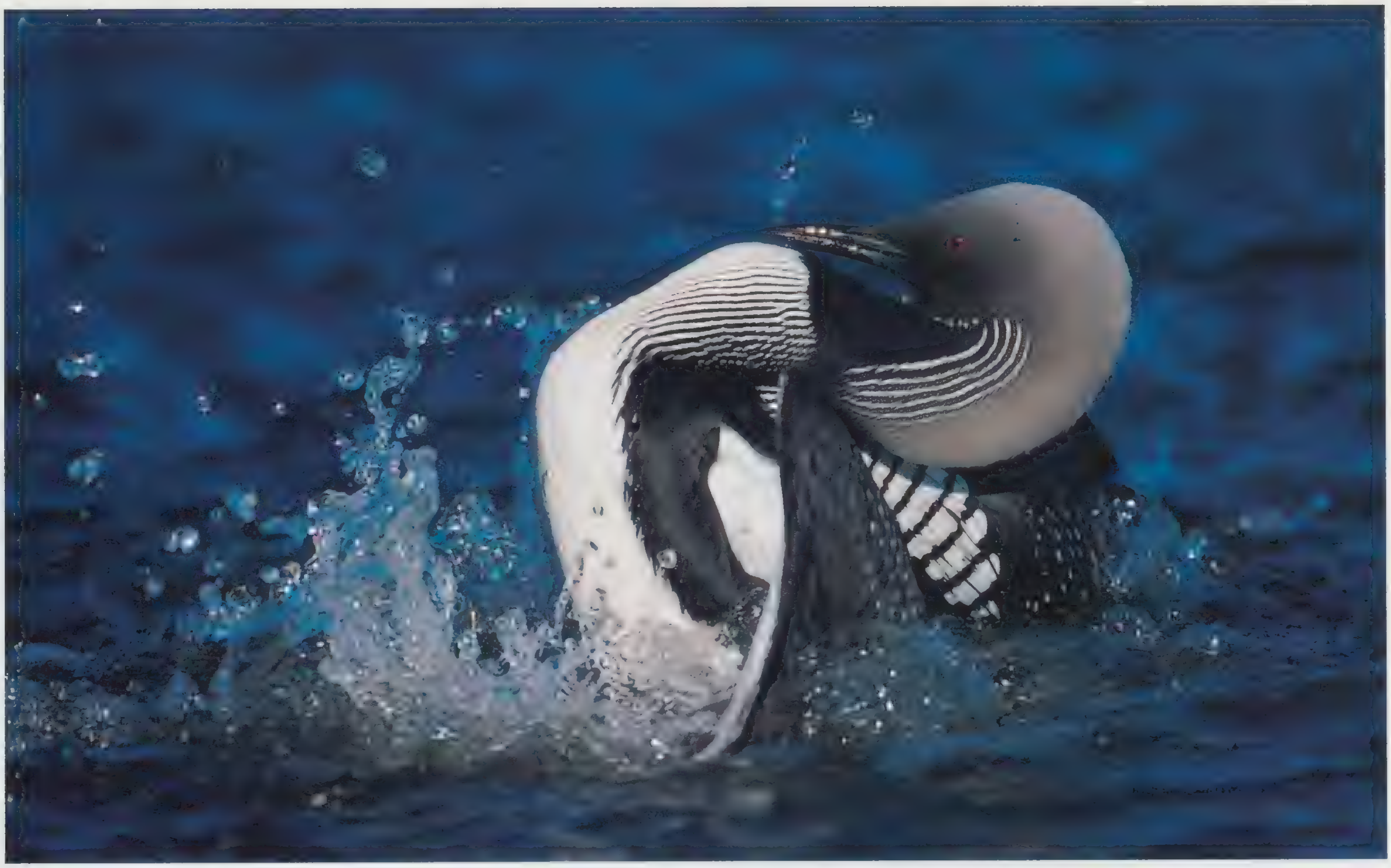
Churchill Wilderness Encounter—Bonnie Chartier: P.O. Box 9, Churchill, Manitoba, Canada R0B 0E0; (800) 265-9458.

Photoguides—Tom Vezo: 22 Lakeside Lane, Bay Shore, New York 11706; (516) 969-1695; or Jim Roetzel: 4865 Elm Way, Stow, Ohio 44224; (330) 686-0674.

Wings—1643 N. Alvernon, Suite 105, Tucson, Arizona 85712; (520) 320-9868.

Victor Emanuel Nature Tours—P.O. Box 33008, Austin, Texas 78764; (800) 328-8368; e-mail: ventbird@aol.com.

Moose Peterson/Wildlife Research Photography—P.O. Box 3628, Mammoth Lakes, California 93546-3628; (760) 924-8632.



At a pond near Churchill, an adult Pacific Loon (above) performs a dramatic display, arching its back and spreading its wings, splashing water high in the air. At right, the author sits beside one of the granary ponds, waiting for feeding shorebirds to come within camera range.

published by the American Birding Association. Bonnie has lived in Churchill for years, and she runs her own tour company called Churchill Wilderness Encounter. She knows the area well and shares her wealth of local birding knowledge in her book, which has numerous maps and tips on where to go and what to look for in the area. She also provides lists of hotels, restaurants, vehicle rental agencies, and more. To order the book, call ABA Sales at (800) 634-7736.

If you do choose to visit Churchill with an organized tour, be sure to sign up with one that is tailored to your particular needs, be they birding, photography, or polar bear watching. Because the goal of most birding tours is to cover as much ground and see as many species as possible, these tours are not always the best choice if your main interest is bird photography. To photograph birds effectively, you sometimes need to spend a lot of time in one area, perhaps working with only one or two species at a time. You won't see as many species, but you'll come home with a good collection of photographs. On the other hand, if adding birds to your life list is the primary goal of your trip, you should definitely sign up with a good birding tour.

Because the main focus of my trip was to photograph birds (primarily shorebirds), I went with Photoguides, a tour company specializing in nature photography, run by Tom Vezo and Jim Roetzel—top bird photographers who have several years of experience guiding groups in Churchill. But several other companies take tour groups to Churchill. My advice is to shop around and see who offers the best price, who has the most experience, and whose itinerary most closely fits what you want to accomplish in Churchill.

Whatever your reason for going there, I'm sure you'll have a great time in Churchill. But be sure to bring plenty of mosquito repellent. ■

JIM ROETZEL

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Lynne Cherry's Journey

BY RACHEL DICKINSON

Insatiable curiosity, dedication to environmental activism, and artistic talent have placed this gifted author at the forefront of children's literature

Lynne Cherry sat hunched over a table in the corner of the observatory, oblivious to the honks and squawks of the Canada Geese that skittered across the pond outside. Around her lay scattered the tools of her trade—brushes, paints, a jar of cloudy water—and a cup of coffee. She carefully dipped a brush into the water, dabbed it into the green paint, and painstakingly began filling in the leaves on the tree in the foreground of an illustration for her upcoming book, *The Shaman's Apprentice*—a collaborative work with ethnobotanist, Mark Plotkin.

Cherry was visiting the Laboratory of Ornithology to present an illustrated lecture at the Monday Night Seminar. The Fuertes Room was jammed with Cayuga Bird Club regulars and parents and children, all waiting to see and hear Lynne Cherry, the award-winning children's book author and illustrator. I walked into the Fuertes room and took a seat in the front row, right next to an eight-year-old boy who was desperately trying to keep two Lynne Cherry books balanced on his lap as he squirmed this way and that. I asked him if he liked Lynne Cherry's books, to which he replied, "Oh yes" and then, in typical eight-year-old non-sequitur fashion, he proceeded to point to and identify each bird in the Louis Agassiz Fuertes frieze that ran around the top of the wall.

The room was quiet—punctuated by occasional "oohs" and "aahs" as Cherry flashed slide after slide of her beautiful illustrations. A dedicated environmentalist, she talked about the process of developing the stories for her books—*The Great Kapok Tree* (1990), *A River Ran Wild* (1992), *The Armadillo from Amarillo* (1994), *The Dragon and the Unicorn* (1995), and her most recently published book, *Flute's Journey: The Life of a Wood Thrush* (1997). These are all picture books aimed at a young audience (ages 6 to 10), but unlike many environmental theme books for that age group, they do not fall in the category of "eco-dread," delivering a

A talented artist, Lynne Cherry illustrates all of her books. At left and above, watercolors of Wood Thrushes from her latest book, Flute's Journey. *In all of her work, she tries to provide a hopeful message for children—that through their own efforts they can help change the world for the better.*

ILLUSTRATIONS BY LYNNE CHERRY/COURTESY OF HARCOURT BRACE & COMPANY

message that humans are destroying the environment and there is no hope.

"I purposefully send a message that there is something kids can do to change the world," she says. Children help clean up rivers, they help buy pieces of the Amazon rain forest, they adopt whales. Characters in her books often have epiphanies while in the presence of nature and consequently change their behavior. According to Cherry, "individuals can make a difference and make good decisions if they just look around them and realize that humans are not the only species inhabiting the earth."

And Cherry has put her money where her mouth is. She is the founder and director of the Center for Children's Environmental Literature (P.O. Box 5995, Washington, D.C. 20016). Members include more than 200 authors and illustrators of children's books, major publishers of children's literature, conservation organizations, teachers, students, and concerned citizens. The center publishes *Nature's Course*, a quarterly newsletter that is theme-based and provides teachers with creative ideas about how to incorporate children's literature into their curriculum. They also run teacher-training workshops in collaboration with other organizations such as the Smithsonian Environmental Research Center, the Roger Tory Peterson Institute, and Zero Population Growth.

Lynne Cherry's journey began in the woods and fields surrounding her childhood home. She learned that if she sat silently for hours she could become virtually invisible, and the birds and animals would forget she was there and go about their business. "I played in those woods from early morning to late at night—I was in love with the woods—I knew where every raccoon and every salamander lived," she says. One day, Cherry came home from school and found the woods being clear-cut. "It was one of the most traumatic days of my life because they were destroying my world," she said. "Many of us have a single experience that we feel terrible about, and this was mine. When I learned about the destruction of the rain forest, I thought of my woods, and I wondered what was happening to all the animals."

For the past 15 years, Lynne Cherry has been artist-in-residence at some of the country's most impressive environmental research centers, including the Princeton Center for Energy and Environmental Studies, the World Wildlife Fund, the Smithsonian Environmental Research Center, Patuxent Wildlife Research Center, and the Marine Biological Laboratory at Woods Hole. Cherry often has to explain what artist-in-residence might mean to bewildered administrators at scientific institutions ("No, I don't want to get paid, and yes, I'll help you with illustrations for your projects") and that everyone benefits from the arrangement. Cherry gets a top-notch environmental education, and the institution gets a top-notch illustrator.

I think of Lynne Cherry as the Diane Ackerman of children's literature. Like Ackerman, she finds the topic she passionately wants to write about and then she immerses herself in it. She conducts meticulous research for both the text and the illustrations of her books, each of which is only 36 pages long. In all of her books, the plants and animals are drawn and painted with botanical and anatomical precision. While researching *The Great Kapok Tree* (with more than a million copies in print it is her most successful book to date), Cherry was a resident at the World Wildlife Fund's base camp in the Amazon rain forest. This enabled her to study and sketch the tropical flora and fauna. She tells a story about sitting quietly in the jungle and hearing a strange noise. "I heard a sound from the underbrush—like an exhaled breath—and I was sure it was a jaguar," she says. "I realized that I didn't know what to do: do you sit still, do you run, do you jump up and down to try to scare it away? So I just sat there—and I heard it again. And out of the underbrush burst a . . . hummingbird."

Ken Rosenberg, assistant director of the Lab of Ornithology's Conservation Science program, served as a consultant for her book, *Flute's Journey: The Life of a Wood Thrush*. "Lynne was interested in writing about a bird that kids would be familiar with and that was a spring and summer resident of Maryland and a winter resident of Costa Rica," says Rosenberg. "Many of the more colorful birds such as Scarlet Tanagers don't winter in Costa Rica, so I helped her settle on the Wood Thrush, which, although not flashy, has a beautiful song." He then gave her information about the breeding biology of Wood Thrushes and the specifics of their migration.

KEN ROSENBERG

During a recent visit to Peru, Lynne Cherry (above) sits in a camp in the rain forest, working on an illustration for an upcoming book.

Last summer, both Rosenberg and Cherry taught at the Rain Forest Educators Workshop, a week-long seminar in Peru run by International Expeditions for North American teachers. Rosenberg, an expert in Peruvian birds, was the resident ornithologist, while Cherry worked as an environmental educator. She did "journaling" with the teachers, engaging them in drawing exercises meant to strengthen skills they needed to put what they were hearing and seeing onto paper. For example, she had them close their eyes and then draw what they were hearing or had them draw, without looking at the paper, what they were seeing—exercises that would connect the various senses.

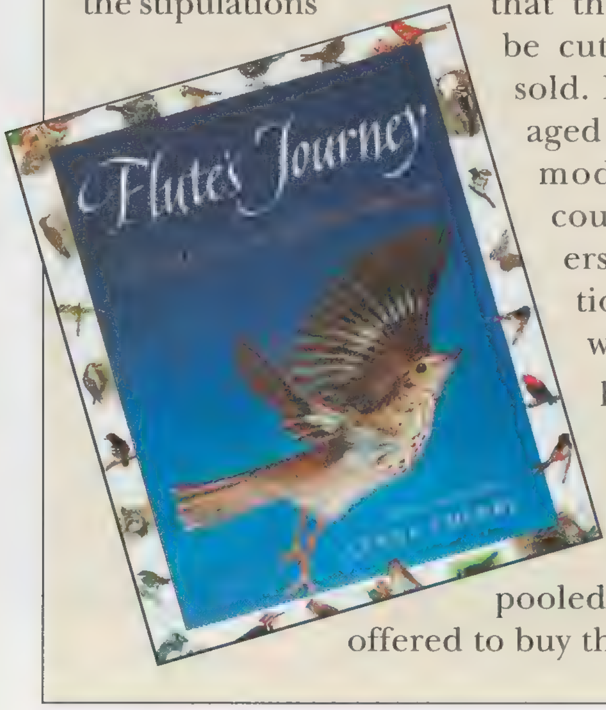
Cherry has always believed that environmental education for children will filter up and educate their parents. "Kids are pure, and you feel that there's real hope if you can get through to them, you can reach their parents," she says. "Kids are very moralistic and see the world in black-and-white terms, unlike adults who have learned how to rationalize and compromise."

Armed with a fine arts degree from the Tyler School of Art and degrees in teaching and art therapy from Temple University, Cherry decided she wanted to start an international children's newspaper. "I loved the *Weekly Reader* as a kid, and I thought it would be neat to try to start something that would give kids another perspective—say a Third World perspective—on environmental issues."

SAVING FLUTE'S FOREST

Lynne Cherry is, above all, a dedicated environmentalist, and one of her primary goals in creating children's books is to help save vital wildlife habitat. In that respect, her latest book, *Flute's Journey,* is a whopping success. It has already played a major part in saving Maryland's Belt Woods—a 515-acre tract of old-growth forest and the birthplace of her fictional protagonist, a young Wood Thrush named Flute.

Located a short distance north of Washington, D.C., the Belt Woods were originally part of a much larger colonial land grant given to Seton Belt. These woods have always provided prime nesting habitat for migratory songbirds, and they have remained pristine thanks to the wisdom and foresight of the Belt family, who passed down—along with the land—the ethic of preserving the trees.



The Belt family eventually gave the land in trust to the Episcopal Diocese of Washington, D.C., with the stipulations that the trees should never be cut and the land never sold. But the Diocese managed to have the will legally modified so that they could sell it to developers. When the conservation community caught wind of the Diocese's plans, the Trust for Public Land, the Western Shore Conservancy, and other concerned individuals pooled their resources and offered to buy the woods. The Diocese said that their offer was too low, so they refused to sell.

Enter Lynne Cherry and her as yet unfinished book. As Cherry traveled around the country talking to kids about environmental activism, she started telling them about the Belt Woods and *Flute's Journey*—a book whose ending might yet be happy or sad, depending on what the Diocese decided to do with the woods. Pretty soon the local papers reported the story, which then got picked up by the larger papers, until finally Cherry ended up on the popular television program, "Sunday Morning," in April of 1996. While on the air, she told the story of the Belt Woods to millions of viewers and encouraged concerned people to write to the Bishop of the Diocese. The Bishop subsequently received thousands of letters—many of them from schoolchildren—protesting the planned sale and development of the woods. Within a week the Episcopal Diocese capitulated and agreed to sell the land to the State of Maryland, in partnership with the Trust for Public Land. And so the Belt Woods were saved for future generations of birds and appreciative humans.

Cherry was awarded an individual grant from the John D. and Catherine T. MacArthur Foundation to do research in the field of children's publications and create a children's newspaper. The result was *Nature's Course,* the aforementioned quarterly publication of the Center for Children's Environmental Literature.

The combination of insatiable curiosity, dedication to environmental activism, and an artistic talent that most of us only dream of has placed Lynne Cherry at the forefront of children's literature. Her books have received awards from the International Reading Association, *Reading Rainbow,* the American Booksellers Association, and the American Library Association. In 1993, Cherry was named the Environmental Educator of the Year by the North American Association of Environmental Educators.

Where does she go from here? To continue to spread her message that "if everyone does just one simple positive act, we'll have a much better world"—a message that is obviously not lost on the kids who read her books and are inspired to buy chunks of endangered forest and push local governments to clean up rivers. ■

Rachel Dickinson is a freelance writer based in Freeville, New York. She frequently writes for this magazine.

TURNING WASTEWATER *into* WETLANDS

BY MARCIA BONTA

The manmade wetlands of Hornsby Bend, in Austin, Texas, provide prime habitat for waterfowl, shorebirds, and other migrants, as well as an excellent environmental education facility for inner-city youths

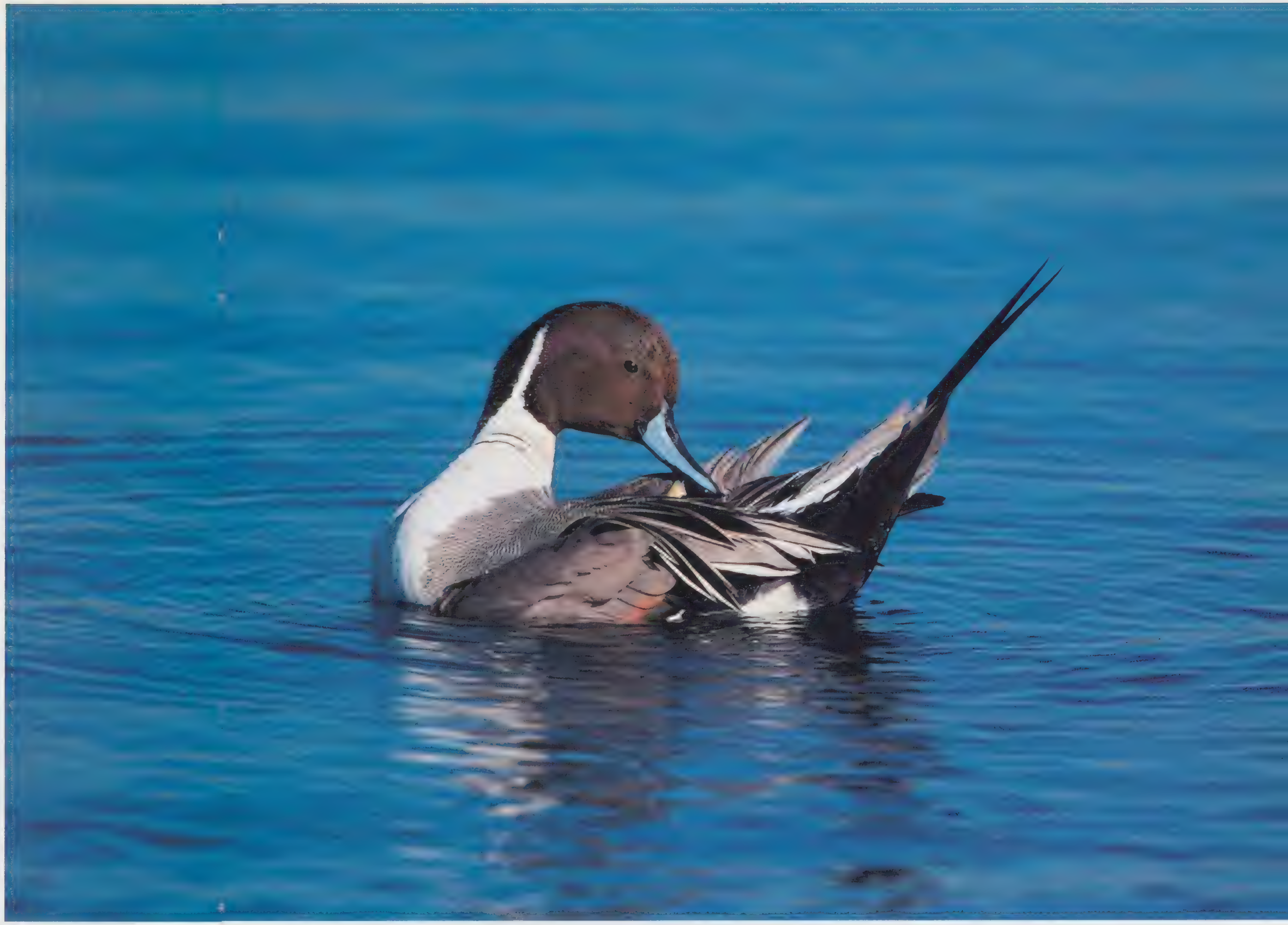
Birding the grounds of a wastewater treatment facility did not sound like my idea of a great birding experience, though my son, Mark, assured me that I would not be disappointed by the city of Austin's Hornsby Bend Biosolids Management Facility in Texas. Still, as the possessor of an unusually keen sense of smell, I was not enthusiastic.

"If it smells bad, I'm out of there," I told him. As we drove past one pond, my misgivings were briefly realized as my son, his wife, and I gagged at the smell and hastily rolled up the windows.

"This is not a good birding area," Mark assured us. But then he was vindicated as we reached another large pond, odor free and teeming with waterfowl. On this cool, windy day, shortly before Christmas, rafts of ducks swam calmly on the choppy water of the several-acre-large pond.

Ian Manners, Robin Doughty, and Barbara Parmenter—all professors at the University of Texas—were there ahead of us, with their scopes set up to scan the pond. They were in the midst of their weekly Hornsby Bend Bird Count, which they began in September of 1993. In a three-and-one-half-year period, they recorded a total of 118 species, including such locally uncommon birds as a Fulvous Whistling-Duck, a Long-billed Curlew, and 10 Crested Caracaras.

TOM VEZO (2)



Numerous ducks such as the Green-winged Teal (at left) and the Northern Pintail (above) as well as many shorebirds, wading birds, and more are taking advantage of the ponds at Hornsby Bend. It has become one of the best places in central Texas to watch waterfowl.

Several raptors such as Ospreys, Northern Harriers, Red-tailed Hawks, and American Kestrels occasionally appear at Hornsby Bend, as do songbirds—most notably Painted Buntings, Blue Grosbeaks, and Scissor-tailed Flycatchers. But these ponds are definitely best known for providing one of the better opportunities to see shorebirds and waterfowl in central Texas. Located on the Central Flyway, they provide important feeding and resting spots for migrants, as well as a winter refuge.

The best months to see ducks and coots are November, December, January, March, and April, while shorebird numbers peak in September, October, April, and May, during fall and spring migrations. The summer months are slower from a birding standpoint, but no one can dispute the excitement of monitoring a pair of Black-necked Stilts that raised young there in the summer of 1996.

People who visit the facility during the optimal months can usually expect to see a few Kill-

CLIFF BEITTEL

deers, a selection of shorebirds, and the more common waterfowl. As a mountaintop resident from Pennsylvania, I specialize in songbirds, so I was grateful for the knowledge and powerful scopes of the professors as they pointed out the few Buffleheads, Northern Pintails, American Wigeons, and Gadwalls amid the hundreds of American Coots, Northern Shovelers, Green-winged Teals, and Ruddy Ducks. We also saw two Eared Grebes, 180 Double-crested Cormorants, and a Great Blue Heron on the pond. Numerous Ring-billed Gulls, an Osprey, a Turkey Vulture, a Northern Harrier, and a Red-tailed Hawk wheeled high overhead. But most exciting of all were the four diving Forster's Terns, rare visitors to the facility. In addition, the wet grasslands across from the pond provided excellent views of a Greater Yellowlegs, 10 Common Snipes, and dozens of Least Sandpipers.

Such impressive numbers and species of birds, especially in an urban area, are reason enough for birders to visit the Hornsby Bend facility, but like many constructed wetlands for wastewater treatment—especially in the southern and southwestern states—Hornsby Bend has become a field trip site for local schools and colleges. Its primary purpose, however, is to treat wastewater. The ponds are actually settling lagoons. Hornsby Bend is the proud winner of the Environmental Protection Agency's first-place award for Beneficial Reuse of Biosolids. That's because the constructed wetlands process water separated from sewage sludge, which is used to manufacture Dillo Dirt garden fertilizer. But unlike many other such facilities, Hornsby Bend does not release any of the reclaimed water into the nearby Colorado River.

The settling ponds or lagoons have produced an excellent food source for birds, because the biosolids settling on the bottom feed small organisms that in turn feed large numbers of aquatic birds. In addition, the varying depths of water in the ponds attract a diversity of shorebirds and waterfowl. A nearby path along the Colorado River, also on the grounds of Hornsby Bend, is a great place to watch terrestrial and riparian birds.

In the past, bird watching had always been incidental to the wastewater treatment facility. Then, in 1995, the city of Austin Water/Wastewater Utility, which owns and operates the Hornsby Bend facility, decided to shut down two of the ponds. Pond I had filled up with effluent and was the smelliest part of the plant, so it was the first to be decommissioned. Faced with the loss of still another pond, the Conservation Committee of the Travis Audubon Society began to search for ways to save at least a portion of the existing habitat for birds and bird watchers.

After discovering how important Hornsby Bend was to the bird-watching as well as the education communities, Audubon members began lobbying the mayor of Austin and members of the city council to promote habitat conservation at the facility. Slowly they gathered support for their position, and, early in 1996, the city council adopted a resolution directing the city manager to use the expertise of local Audubon Society members to manage the lagoons in compliance with Austin's wastewater permits and to provide bird-watching and other nature-related opportunities. Further support came from the Environmental Committee of the Chamber of Commerce and the Austin Conventions and Visitors' Bureau.

Out of this growing interest came the ongoing Hornsby Bend Steering Committee, an informal group that includes local Audubon and Sierra Club members and representatives from the National Wildlife Federation, the University of Texas, the Colorado River Watch Foundation, Partners in Flight, and the Water/Wastewater Utility. During a series of meetings of the steering committee, the bird-watching and education communities learned the pros and cons of maintaining habitat within a wastewater facility—for example, that wastewater sludge must be kept at least 50 feet from people, and that the budget of the Water/Wastewater Utility does not include funds for maintaining bird habitat. Furthermore, by requesting that the facility refill a decommissioned settling lagoon with fresh water, they could be plunging the utility into a regulatory morass.

Nevertheless, the Water/Wastewater Utility agreed to investigate refilling Lagoon II, a large pond near the Colorado River. They discovered that, although it was plausible from both operational and regulatory standpoints, sev-

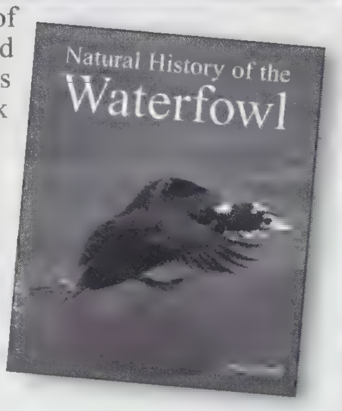
In addition to various water birds, interesting songbirds such as the Scissor-tailed Flycatcher (above) can be found around the wastewater facility. At right, the author (right) and Ian Manners, a professor at the University of Texas, scan the ponds at Hornsby Bend.

BRUCE BONTA

Natural History of the Waterfowl

by Frank S. Todd

This 504-page comprehensive volume covers the natural history of each of the more than 160 members of the ducks, geese, swans and screamers of the world. Beautifully illustrated and authoritative, this remarkable book is destined to become the ultimate reference work on the waterfowl of the world.



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KEN ROSENBERG

Thank You, Chrysler!

On behalf of the entire Sapsuckers big-day birding team, I'd like to thank the Chrysler Corporation for their generous loan of a Town and Country van to use in the World Series of Birding this past May. I can honestly say that in the more than 10 years I've been competing in this event with the Sapsuckers, this is the best big-day vehicle we've ever used. The large, sliding doors on both sides of the van gave us an unparalleled ability to see and hear birds, and the extra space in the back held all of our precious optical equipment, gear, and submarine sandwiches as we rode comfortably for more than 500 miles.

— *Ken Rosenberg*
Captain
Sapsuckers

Cornell Lab of Ornithology
http://birds.cornell.edu

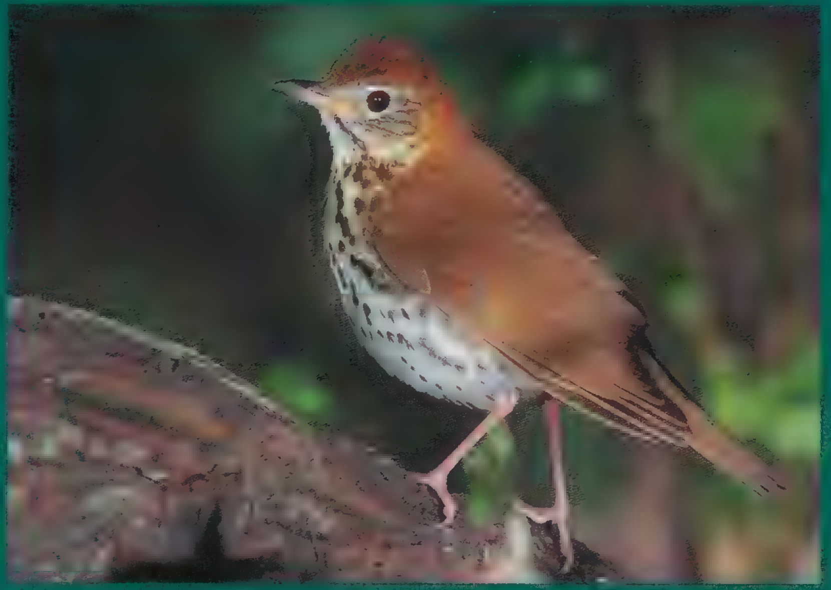
INTO THE WOODS

Through the Lab's Birds in Forested Landscapes program, participants learn the finer points of bird study while gathering important scientific data on woodland thrushes and raptors

BY LESLIE INTEMANN

It was the kind of spring day Upstate New Yorkers dream about during the seemingly endless gray days of winter, which are short on light and long on chilling temperatures. By 10:30 on that morning in late May, the sun's rays had warmed Sapsucker Woods to a most pleasant temperature in the low 70s Fahrenheit, and the dreary brown landscape of winter had turned spring green as new leaves blossomed throughout the forest. All was quiet within the canopy of trees save for the occasional rustle of leaves beneath our feet. A *che-bek* call rang out every so often as a Least Flycatcher tracked our progress through the trees. A Veery lighted on a nearby branch to watch us, too. An Ovenbird's *teacher-teacher-teacher* song echoed from afar. How fitting for the project of the day.

Lab biologists Jim Lowe and Sara Barker had the good fortune to be out on



How much forest does this Wood Thrush need to breed? That's just one item scientists hope to learn from BFL.

BHL

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that gorgeous morning, collecting sample data for Birds in Forested Landscapes (BFL), a volunteer-based research project recently launched by the Lab of Ornithology. They hoped to attract Veeries, Wood Thrushes, and Hermit Thrushes, using sound recordings of the birds' vocalizations. But, Lowe and Barker weren't the only ones lucky enough to be working outside. This past year, hundreds of citizen scientists across the United States and Canada went into the woods during the breeding season to see and hear birds in forested landscapes.

At a BFL site near Ithaca, New York, Lab researchers Jim Lowe and Sara Barker collect sample data that they will compare with data gathered at the same location by local volunteers.

Simply put, BFL is a continentwide study to look at the effects of habitat, and especially forest fragmentation, on the breeding success of thrushes and hawks. BFL focuses on seven species of North American thrushes—Wood Thrush, Veery, Swainson's Thrush, Gray-cheeked Thrush, Varied Thrush, Hermit Thrush, and Bicknell's Thrush—and two forest raptors: Cooper's Hawk and Sharp-shinned Hawk. Because BFL is a breeding survey, fieldwork starts after spring migration and wraps up before migration starts again in late summer.

TIM GALLAGHER (2)

BFL is the natural outgrowth of Project Tanager, which was one of three National Science Experiments developed by the Cornell Lab of Ornithology. (The other two were the Seed Preference Test and Project PigeonWatch.) These experiments were designed to involve birders and amateur scientists across the continent in scientific research. Project Tanager studied the effects of forest fragmentation on four species of North American tanagers—Scarlet, Summer, Hepatic, and Western. Between 1993 and 1996, more than 1,500 groups of volunteers combed nearly 3,000 woodlots across the United States and Canada to find breeding pairs of these species.

Forest fragmentation results when large, continuous forests are chopped into smaller blocks by roads, logging, agriculture, or development. Many researchers suspect that fragmentation of woodland habitat makes the birds that reside there more vulnerable to predators and nest parasites. They point out that open-country and edge predators such as jays, crows, and cats, as well as the parasitic Brown-headed Cowbird, can easily penetrate forests that have been dissected by roads or power-line cuts.

Results from Project Tanager suggest that Scarlet, Summer, and Western tanagers are sensitive to the size of a potential habitat patch, and that the nature of the habitat surrounding a forest fragment can have just as significant an influence on the birds as the size of the fragment itself. In some locations, tanagers *will* nest in a small patch of forest—as long as the landscape surrounding that patch contains extensive amounts of forest.

Ken Rosenberg, project director of BFL, discusses why Project Tanager was just the tip of the iceberg when it comes to studying forest fragmentation. "Two difficulties cropped up with Project Tanager. First, people couldn't find nests, because tanagers nest high in the forest canopy. So, although we received a lot of information about where the tanagers were, we had almost no information on how fragmentation might actually be affecting their reproductive success. And second, we weren't able to determine the actual rates of nest parasitism and predation."

Thus, the idea for using the same protocol (sending volunteers out with sound recordings to take a targeted census at particular points, then measuring the habitat) on a different set of birds was born. The Lab chose thrushes because, like tanagers, at least one or more species can be found across most of North America. But, adds Rosenberg, thrushes nest on the ground or low in trees, making it easier for participants to find nests and thus enabling them to go one step further than Project Tanager,

PAGES 28-29, TIM GALLAGHER; INSET, BRIAN E. SMALL.

gathering vital data about rates of parasitism and nest predation in relation to forest fragmentation.

Another issue surfaced once the Project Tanager data were analyzed. "We figured out the minimum size required for a woodlot that is likely to have tanagers, and it turned out to be very small—tanagers were found in woodlots of just a few acres. We worried that, by using tanagers, we were studying at a scale that was not large enough to capture a landscape-level problem with fragmentation," adds Rosenberg.

To compensate, the Cooper's Hawk and Sharp-shinned Hawk were added to the group of species being studied by BFL, because, in theory, they require much larger areas of appropriate habitat than small songbirds to breed successfully. Additionally, BFL is studying large-scale features of the landscape, such as the percentage of forest in the 2,500 acres surrounding the census points and the distance to the next closest forest. In the end, BFL scientists will see which of these factors is most important in determining where these birds will be found.

But there's something else about BFL that's just as important as the data. And that's the human quotient. The people at the Lab of Ornithology make these citizen-science projects work, because they're honestly excited and inspired by what they're learning. And they communicate their excitement to the participants. Ask members of the BFL team what they like best about this project, and they'll tell you two things: getting out into the field and working one-on-one with volunteers.

Stefan Hames considers his involvement with BFL a "lucky break." Hames, who is a BFL research biologist, is also a graduate student pursuing a Ph.D. in Ecology and Evolutionary Biology at Cornell. In his thesis research, he is studying how birds of prey space themselves over the landscape—research that dovetails nicely with BFL. In addition to studying the effect of fragmentation on Cooper's and Sharp-shinned hawks across North America, Hames will compare large-scale patterns derived from BFL data with the results of his local research in Tompkins County, New York. "This combination should help us tease apart the mechanisms underneath the patterns we see," says Hames. "This type of research would not be possible without the participation of volunteers."

Hames is also enthusiastic about BFL's potential role in educating the public about woodland raptors and its potential for involving new participants in the Lab's citizen-science projects. Moreover, as a former volunteer at California's Golden Gate Raptor Observatory who "turned pro," he knows how seriously volunteers take these projects and how many good researchers are out there among the so-called amateurs. "From both a research and an educational standpoint, it's just exciting to be able to tap into that network," he says.

If it sounds like BFL is a project for advanced birders only, think again. Jim Lowe, a Lab biologist since 1983, explains why BFL is within reach for all interested birders. "Even beginning birders are welcome to take part in the project, as long as they're willing to work a bit harder," says Lowe. "This is a fairly com-

ROB CURTIS

No more warbler neck. BFL volunteers search for thrush nests in the dense understory of forests across the United States and Canada. BFL scientists hope to discover how predators and parasites such as Brown-headed Cowbirds affect the breeding success of Hermit Thrushes (above) and six other thrush species found in North American forests.

plex project that does entail more work than most citizen-science projects, but because you're working with a limited number of species, you don't have to be an expert birder. In most places, people have one, two, or maybe three thrushes they need to identify. If they can't identify these thrushes at the start, they can take our training tape and their field guides, and they can practice and learn just those few."

Although both Sharp-shinned Hawks (above) and Cooper's Hawks are secretive predators, they both respond to broadcasts of their own and related species' vocalizations. Using sound recordings makes it easier to detect these two raptors, providing scientists with a detailed picture of their habitat requirements and an increased understanding of the effects of habitat fragmentation on their populations.

ISIDOR JEKLIN

As Lowe says, the birding portion of BFL is relatively simple. The habitat portion is more challenging, because it involves procuring accurate maps or aerial photographs, measuring habitat patches, measuring the distance to the next closest forest, and writing up detailed site information. Although this may seem intimidating, Sara Barker, the BFL project coordinator, assures me that help is available to all who request it. "We start by giving people a list of site coordinators, many of whom are with land management agencies and have access to accurate maps or GIS mapping systems," says Barker. "We also recommend checking the natural resources department of your local college for mapping assistance."

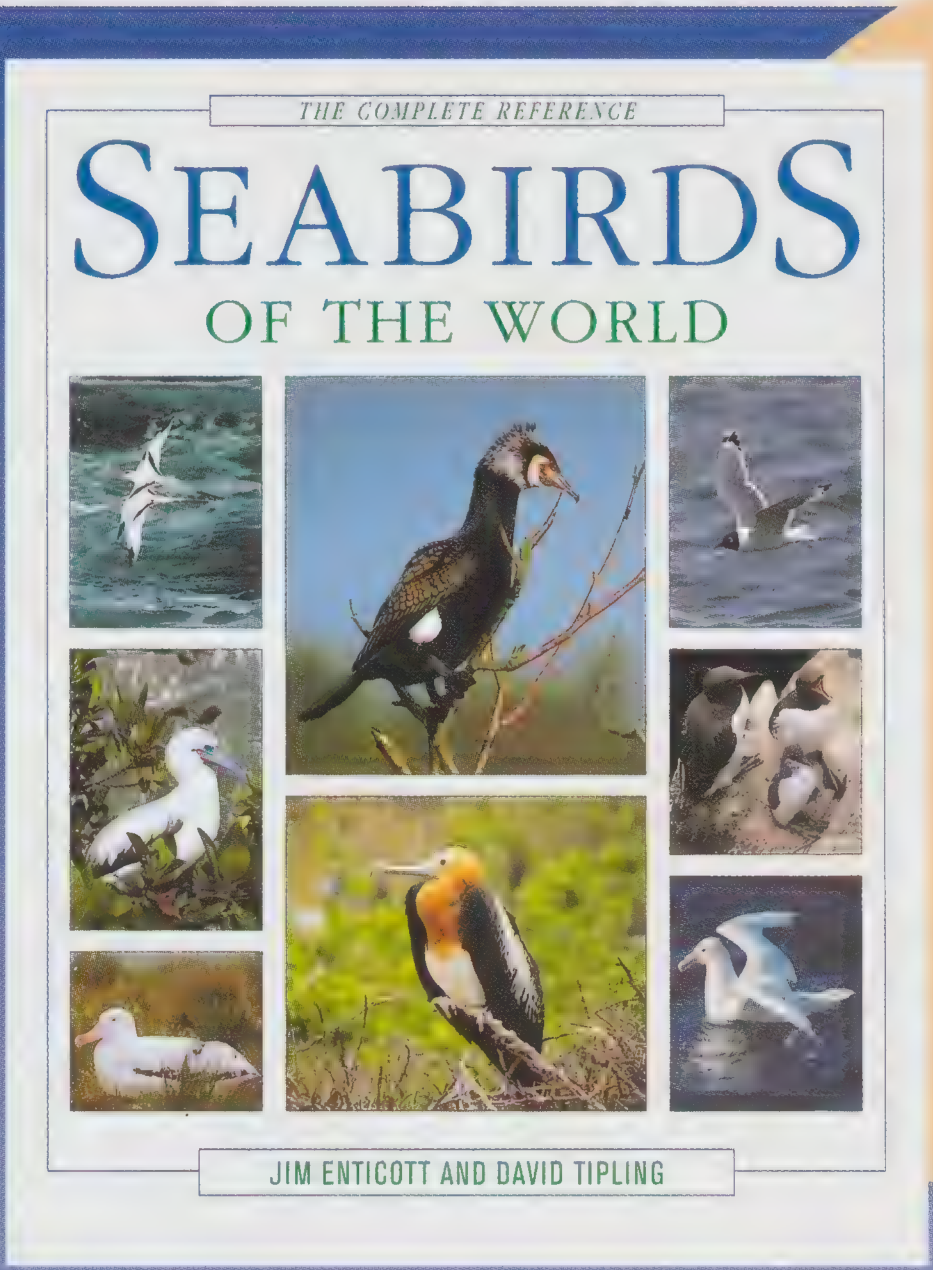
"We talk to participants who feel overwhelmed," explains Lowe. "We encourage them to start small—pick just one site and practice this year, and if they feel good about it, they can turn in data next year." And Lowe's success rate? "After we talk, most people are willing to try."

The time each participant spends on BFL is also manageable for most people. To monitor one or two sites, the fieldwork—not including the drive or hike to the site—takes about 30 minutes for each visit. Only two visits are required if you don't detect any thrushes or hawks at all. If you do find birds, you're encouraged to make extra visits to search for nests, check for fledglings, and look for signs of predators. The mapping portion takes an average of two hours per site. If you choose three or four sites, which is the average number of sites for BFL participants, your time involved might add up to two full days, but keep in mind that this time is divided into small portions from early spring until the data are due in September.

After all BFL data are collected and analyzed over the next three to four years, what's next? Extending the project to include other species, perhaps, and to secure that most significant goal—developing conservation guidelines. Rosenberg shoulders the task of analyzing the field data and translating the analysis into conservation guidelines. "If an area is going to be fragmented, we'll recommend the minimum size needed for forest blocks to maintain these forest birds, how close the forest blocks need to be, and whether they need to be in a continuous block. We'll also make habitat recommendations—what kind of trees the birds require for nest sites, how tall the trees should be, and how to make smaller woodlots more suitable for these birds by maintaining a denser understory or adding fruit trees or a water source, for example.

"Eventually," adds Rosenberg, "we'll be able to make recommendations to developers of state parks who would perhaps like to have Cooper's Hawks and a couple of species of thrushes on the property. At the largest scale, we'll be able to advise state and federal agencies how much forest is needed, at a county level, for instance, to maintain whole populations of these birds."

For more information on Birds in Forested Landscapes, write to BFL, 159 Sapsucker Woods Road, Ithaca, NY 14850; call (607) 254-2446; or send e-mail to <forest_birds@cornell.edu>. ■



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SHOREBIRDS: A PHOTOGRAPHER'S DREAM

Text and Photograph by Tim Gallagher

These incurably photogenic birds make picture taking a snap

What is it about shorebirds? Whether they're running back and forth with the waves at the beach, rummaging through seaside debris searching for food, or sound asleep on a mudflat with their heads tucked in and a leg pulled up, they are always interesting and provide wonderful opportunities for photography. If it's possible for birds to have personality, they've got it—in spades.

Besides being photogenic, shorebirds are usually fairly easy to approach, particularly if you move slowly and carefully. For the most part, they've had very little negative contact with people. Many of them breed in remote arctic regions of North America, migrating to the lower 48 states and farther south each fall. And since most shorebird species are not hunted by humans, as are waterfowl and other game birds, they tend to be relatively unsuspicious of people.

Public beaches are great places to photograph shorebirds. When I lived in Southern California, I would sometimes spend hours photographing birds in places like Laguna Beach, with all its secluded coves, or Dana Point, with its rich variety of species. There, Sanderlings, Black-bellied Plovers, Ruddy Turnstones, Willets, and more are often plentiful. And because they are exposed to people constantly, they are remarkably tame.

One of my favorite techniques for working a beach is simply to sit on the sand with my camera on a tripod, with the legs set in the fully lowered position. (A variation on this idea, if you want to take eye-level shots of the birds, is to build up a small mound—about eight inches high—of sand, cover it with a towel to protect your equipment, and then use it to support your camera instead of a tripod. You can lie down flat on the sand and hide behind the mound, which makes a

With their relentless energy—working their long bills constantly like little sewing machines—shorebirds such as this Stilt Sandpiper are always a joy to watch and also to photograph.

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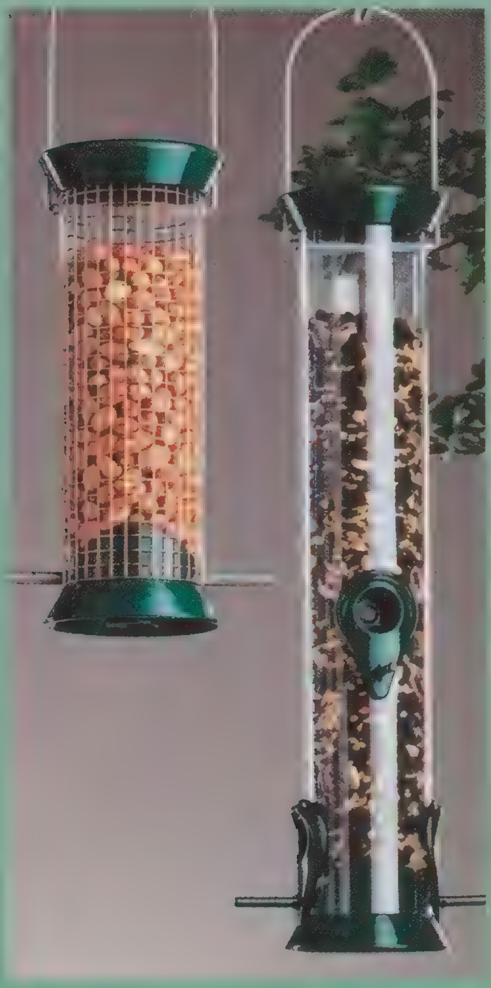

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decent blind.) Then I wait for the birds to approach me as they move up the beach foraging. Shorebirds almost always move laterally along the beach, in one direction or the other, as they follow the waves back and forth. I just figure out which direction they're heading, then I sit down 100 yards or so farther down the shoreline and let them come to me.

Using the above-mentioned technique, shorebirds often come amazingly close—sometimes too close for the minimum close focus of the 500mm f/4 lens I usually use for bird photography. Occasionally in this situation I switch to my 80-200mm f/2.8 zoom lens, which allows me to photograph birds much closer to my camera. I also sometimes use extension rings on the 500mm lens, which reduces the minimum close-focus distance of the lens, but it also results in a considerable loss of light that must be compensated for by using a slower shutter speed or a wider aperture setting.

If you do decide to photograph shorebirds at the beach, be very careful with your equipment. Nothing is more potentially destructive to camera equipment than a beach environment, with its gritty sand and corrosive saltwater. When you're lying flat on the sand near the water's edge, concentrating on the Sanderlings that are walking toward you, it's easy to get swamped by an errant wave that comes farther up on shore than the waves that preceded it. Be vigilant and don't let it happen. Cameras are expensive to replace.

I also enjoy photographing shorebirds on the mudflats they so often frequent during migration and in winter. In California, I had a favorite shorebird spot where a small spit of sand protruded into a local estuary. The birds never seemed as tame as those I photographed at the beach, but the numbers and the variety of species were better. Dowitchers, Marbled Godwits, Willets, and more swarmed over this place, but I always had to stalk carefully to get close to them. I often went there at or just before dawn and sat down 100 feet or so from them with my tripod in the fully lowered position. I would approach them slowly and cautiously, lifting up my camera and tripod, moving it a couple of feet farther forward, and then dragging myself up to it—again and again until I got within effective picture-taking range of the birds. I always dressed in drab clothing there, to blend in with the mud-gray surroundings.

In a situation like this, early in the morning, many of the birds are still asleep. As you slowly approach them, watching them only with your peripheral vision, occasionally one will lift its head and gaze at you for a moment through half-closed eyes. This is the time to freeze, and you should not move until all the birds settle down again. Either the bird will tuck its head back into place again or it may spook and fly, sometimes taking the whole flock with it.

Don't rush it. You've got plenty of time. If you got there at dawn, the light might not even be decent for a couple of hours. Sit there and enjoy the experience. Look through your viewfinder. Experiment with composition. Later, as the morning mist gradually burns off, you'll have a brief time when the light is perfect—bright enough to saturate your film with the subtle colors of the shorebirds, but wonderfully diffused by the rapidly vanishing mist.

To me, nothing is quite like the sense of eager anticipation I get sitting next to a flock of shorebirds like this, waiting for the light to get just right. It's almost like meditating—closing my eyes and concentrating deeply; visualizing the wonderful photographs I will soon be taking.

When you're photographing shorebirds, always watch closely for interesting behaviors—two birds acting aggressively toward each other or perhaps a lone dowitcher taking an icy splash bath in the middle of a group of sleeping Willets. Also look for humorous sights, such as a whopping Long-billed Curlew standing in the middle of a flock of tiny sandpipers. Look for these special moments and, when you see them, shoot a lot of film. Film is cheap and easy to get compared with great picture opportunities. But fortunately, with shorebirds, great pictures are almost always there for the taking. ■

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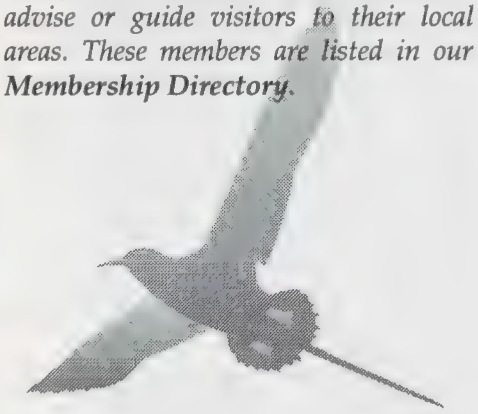

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The Catbird Seat

NOSING OUT AN IDENTIFICATION

By Pete Dunne

"Dr. Gesundheit to see you, Mr. Duster," the intercom intoned. "Send him in," the editor of Hootin-Toonin's field guide series said, speaking into the book proposal clasped in his hands.

"I am in," a voice corrected.

"Oh," said the editor, fixing his eyes upon his guest, trying to determine whether the somewhat height-challenged individual was seated or standing. "Very pleased to meet you," he said, reaching across the desk to shake his hand. Instead of taking the extended hand, the visiting scientist crouched and began peering up into the editor's face.

Startled, the editor stooped in an effort to meet his guest eye-to-eye. This caused the man to drop to his knees, which triggered Mr. Duster to lie flat on his desk, which caused the ornithologist to crouch. His concentration on the editor's face never wavered.

"Your nostrils are vunderful!" he exclaimed.

"Thank you!" the editor replied. "Yours are nice too. So, you study human nostrils as well as bird nostrils?" he assessed, juxtaposing the man's antics and the subject of his book proposal—a field guide to avian nasal mites.

"Nein," he said, pulling out a magnifying glass and peering intently into the editor's left nostril. "Der nostril ist just der environment. It is der mites dat I study."

"Of course," Mr. Duster said, drawing away, raising the proposal in a successful bid to prevent the doctor from pursuing him across the desk. "And your premise is that all birds can be differentiated on the basis of nasal mites that are specific to that bird species?"

"Ya," the scientist replied. "Every bird on der planet can be identified by der mites alone even better den der DNA."

"Fascinating," the editor said, considering the possibilities and growing excited about scooping the entire field guide industry. "So, by using your system even look-alike species can be identified in the field?"

"Ya. Mit my field guide to der nasal mites, even der *Empidonax* flycatchers are as plain now as der nose on der face. Here, I show you," he said, taking the manuscript, flipping to a series of magnified photographs showing creatures so ugly that they would induce sleeplessness in Steven King.

"Dis ist der mite from der Least Flycatcher. See how it ist small und gray mit a round head und stubby mandibles? Now der Acadian Flycatcher mite. See? Bigger und on der back greener, ya?"

"I, uh, well, I guess," the editor replied, "but . . ."

"A bad photo," the scientist explained. "An adult mite dat ist very worn. In der book, we use a better photo.

"Also," he said, "der habitat ist different. Der Least Mite ist always at der edge of der thick, hairy growth und only near to der vet places. Der Acadian Mite ist always vhere der hair is thickest und der nostril vettest."

"Do they vocalize?" the editor asked.

"Ya. Der Least Mite says *ah-CHOO* und der Acadian Mite says *AH-choo.*"

"I see. How about Pacific Slope and Cordilleran flycatchers?"

"Ah," the scientist said, warming to the subject. "Here," he said, flipping to the next page.

"I don't see any difference," the editor confessed.

"Der ist no difference!" the man exclaimed triumphantly. "But der Pacific Slope Flycatcher Mite ist alvays found in der right bird nostril. Der Cordilleran in der left."

"Fantastic!" said the editor. "This could revolutionize bird identification."

"Und der scientific study, too. Here ist der Green Heron." The doctor flipped to another page, one showing two ugly-looking creatures—one dark and labeled "Striated" and the other pale and labeled "Green."

"These are *very* different," said the editor. "Clearly different species."

"Nein, nein, nein," the doctor stuttered. "Der mites are der same just as der birds are der same. Only der views are different. In der North America the mites on der tummy lie. In der South America, alvays on der back."

"Remarkable!" the editor exclaimed. "The only question I have is how do you see the mites in the field?"

"Ah," the doctor said. "Dat is der trick, ya? You use der salt solution."

The editor didn't say anything for a moment. Then it occurred to him that perhaps the man was making a joke.

"You mean you have to be very close—close enough to put salt on its tail."

"Nein," the scientist said. "You must squirt der saline solution into the bird's nostril und take a sample to study through der microscope. Ist der only way."

"I see," said the editor.

"Vhat I offer you is der right of first refusal," the doctor said, beaming.

"Exactly right," the editor replied. ■

ILLUSTRATION BY JEFF SIPPLE

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GREETINGS FROM SAPSUCKER WOODS

What I like most about living in the Ithaca, New York, area is that the place abounds with dedicated birders: people who think nothing of spending countless hours in the field, taking copious notes and documenting in detail the passing parade of bird species—not only the rarities but many of the commonplace birds as well.

One such person is Bob Meade, an enthusiastic retiree who spends every morning for a two-month period each autumn counting migrating loons—mostly Common Loons—as they pass over Cayuga Lake at Taughannock State Park. I can tell you from personal experience that it's a frigid place to stand, with howling winds blowing over the lake and waves slapping against the concrete boat launch. And most days you don't even see any loons. What keeps him going? The possibility of witnessing a day like this past November 10, when Bob counted more loons in an hour-and-a-half than he'd ever seen in one day—6,064 in all, smashing his existing daily record by more than 2,600 loons.

I was there at daybreak the following morning, loaded down, as always, with camera gear, binoculars, a scope, and a hefty tripod. Taking good flight shots was impossible—the birds were cruising more than 200 meters high, right overhead, looking long and sleek and dagger-billed. Instead, I shot a couple of rolls of Bob and his assistants—eight or nine of them—as they stared straight up, shivering but enthusiastic. And we logged another major flight: 3,287 Common Loons. Bob treated everyone to home-cooked pancakes at his house after the watch, to thaw out and tally up the score.

People like Bob Meade are true citizen scientists, and virtually all of the Lab's research programs depend on them. Read more about Bob and the Taughannock State Park Loon Watch on page 24 of this issue.

— *Tim Gallagher*
Editor-in-Chief

Cover: Locally common in the northern forests of spruce and fir, the Pine Grosbeak is a large, plump finch, known for its tameness. This adult male is unmistakable with his stunning pinkish-red plumage, accented with gray. Photograph by John Gerlach/Dembinsky Photo Associates, Inc.

Above Right: Rockhopper Penguins are just one of the fascinating bird species that live on New Island in the Falklands. Article on page 10. Photograph by Wolfgang Kaehler.

Back Cover: A female Snowy Owl weathers a brief winter snow squall on an island in Lake Ontario. Photograph by Marie Read.

10 EXPLORING NEW ISLAND *by Michelle Alten*
Albatrosses, penguins, and sea lions abound at this remote outpost in the Falkland Islands.

20 SECRET PASSAGE *by Paul Kerlinger*
Though thousands of loons pass over the United States each year during spring and fall migration, few people notice them.

28 BIRDING AND ECOTOURISM *by Kristi G. Streiffert*
The lure of birding dollars is creating a strong incentive to save bird-rich habitats worldwide.

34 A GUIDE TO SPOTTING SCOPES *by Dave Ross*
Lab reviewers search for the best and brightest birding scopes currently on the market.

Departments

4 LETTERS

5 BIRDNEWS

Columns

6 FLYING FIELD *by Mel White*
Crunch Time

44 IN THE FIELD *by Jack Connor*
Champ: In Memoriam

46 THE CATBIRD SEAT *by Pete Dunne*
The Errors We're Known By

LIVING BIRD

WINTER 1998 VOLUME 17 NUMBER 1

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Letters

OUT OF AFRICA

Reading Netta Pfeifer's article about Joy Adamson and the Wire-tailed Swallows brought to mind three short recollections. When the lioness Elsa died, Joy toured the United States to raise funds for the newly formed Elsa Appeal. A luncheon was held in her honor at the Buffalo Zoo in Upstate New York. My mother, a sculptress and fan, had created a bronze of Elsa, which was the centerpiece. As Joy walked in, she burst into tears and said, "Why, Elsa looks so thin!"

Later, we had the honor of introducing Joy to her first Niagara Falls hamburger. "My mouth is so small, you must cut it up into seven pieces," she said.

On the last night of her visit, the zoo gave Joy a farewell party at my mother's house. My husband and I and our two boys lived nearby, and Joy stopped by on the way to the party to see their pet hamster. She, of course, ended up on the floor, using building blocks to make tunnels and mazes with our kids. It took three phone calls to get her to leave our house and go to the party.

Taddy Dann
East Aurora, New York

"BEEP! BEEP!"

The following observation, I think, also belongs with Jack Connor's article, "Courtship Testing" (Summer 1997), though only a fragment of it. One recent spring I repeatedly saw two roadrunners running through my backyard in the same direction—not together, but a few minutes apart. Then one day, the second one—which I believe was the male of the pair—ran along with something dangling from his bill. The roadrunner did not eat it but carried it in the same direction where the other one had disappeared.

Roadrunners are not mentioned in Jack Connor's article, but my observation might be of interest to him, because roadrunners are fairly easy to observe.

Living Bird is a great joy to me. Just the beautiful pictures alone make it worthwhile. People to whom I pass on the magazine also comment on this aspect. The articles are very interesting. I loved "The Swallows of Kampi ya Pippa," and I hope to read more articles by Netta Pfeifer.

Mrs. Ingeborg Fasse
Boerne, Texas

SOARING WITH A PURPOSE

I make reference to Jack Connor's interesting essay on soaring birds in your Winter 1997 issue. When I was growing up in western Minnesota in the 1930s, White Pelicans were quite common on the prairie lakes. They disappeared, or at least their numbers declined, for some years, but they have been plentiful since the 1970s.

A couple years ago, while visiting the region and driving through the farmland, we noticed a large group of pelicans soaring at a high altitude. They drifted eastward, away from their usual large lake, on the prevailing wind and out of sight.

In discussing this with the locals, they stated that the birds did this regularly, landing at another large lake about 60 miles to the east. In the next day or so they would return to the usual lake. One presumes that they flew directly on the return.

I had observed these birds while growing up, but, until this experience, I did not know that pelicans soared—in this instance, it seems, with a purpose.

William Carl Kaufman
Woodinville, Washington

We welcome letters from readers. Write to The Editors, *Living Bird,* 159 Sapsucker Woods Road, Ithaca, New York 14850, or send e-mail to <livingbird@cornell.edu>.

MARY TREMAINE

The Gannets Return

This past summer, the National Audubon Society's Seabird Restoration Program—in conjunction with the Quebec-Labrador Foundation and the Mingan Islands Cetacean Study—began an ambitious program aimed at reestablishing a Northern Gannet colony on Perroquet Island, Quebec. The island was once the site of a massive colony of the birds, but they were virtually exterminated in the mid-nineteenth century by cod fishermen who used pieces of the dead gannets for bait. In addition, a lighthouse was built on the site, which—because it had to be manned by a lighthouse keeper—created a deterrent to any remaining birds that may have wanted to nest there. Although gannets are now legally protected and the lighthouse is fully automated, the birds have not returned to their former home. Now, only six gannet colonies exist in North America.

Steve Kress, Audubon researcher and director of the Seabird Restoration Program, is a familiar name to many Lab members. He is a long-time Lab associate and is actually based here at Sapsucker Woods. In past issues of this magazine, we have covered his work restoring Atlantic Puffins and terns to islands off the coast of Maine (see Summer 1982 and Spring 1992).

To encourage seabirds to recolonize abandoned sites, Kress and his crew create lifelike decoys of the particular species they're working with and distribute them on the islands where the birds have been extirpated. They then set up a solar-powered CD system that broadcasts vocalizations of the species, recorded at an actual colony. This social attraction technique—which strives to mimic the appearance and sounds of an active seabird colony—has been used successfully by Kress with puffins, terns, murres, and albatrosses.

The Perroquet Island project, funded by the Baird Foundation and the Baillie Fund of Long Point Bird Observatory, follows a two-year test of the gannet reintroduction techniques at Seal Island National Wildlife Refuge. The new location is much closer to existing gannet colonies on Anticosti and Bonaventure islands.

Researchers set out 47 gannet decoys and installed the sound system early in June. Research assistant Minga O'Brien spent more than two months on the island before she saw a gannet circle the decoys and finally land on August 4. Within the next week, several gannets—as many as three at the same time—visited the island. She sighted 319 gannets near the island and saw hundreds more in the distance, during the first two weeks of August.

Kress concedes that it may take several years before gannets start nesting once again at this historic site, but the early signs from this pilot season are very promising. For more information on this and other seabird restoration projects, write to Project Puffin, 159 Sapsucker Woods Road, Ithaca, New York 14850.

Operation Migration Descends on Ithaca

Some interesting visitors dropped in on the Lab's hometown of Ithaca, New York, this past November 6. Bill Lishman—president of Operation Migration—landed his ultralight aircraft, followed by seven Sandhill Cranes. Lishman, who was leading the birds from Ontario, Canada, to a site in Virginia, has been attempting to teach the young, captive-reared cranes a new migration path.

The idea is to encourage the birds to imprint on the ultralight and play follow the leader with the small, slow-flying aircraft on their first migration south. Researchers hope that in subsequent years the birds will follow the same path north and south during their migrations. If these experiments succeed, Lishman—working under the guidance of the Whooping Crane Recovery Team—intends to apply these techniques to establish a population of Whooping Cranes that will migrate in the East. At present, the only migratory flock of these critically endangered birds is in the West. Having two completely separate flocks, existing half a continent apart, will lessen the chances that a single catastrophe or disease could wipe out the entire population.

Operation Migration has already done similar experiments with Canada Geese, teaching them to follow an ultralight aircraft all the way south to their wintering grounds. The geese subsequently returned by themselves the following spring. (Anyone who has seen the popular feature film, *Fly Away Home,* is already familiar with Lishman and his geese experiments.)

Operation Migration researchers plan to dedicate the next five to ten years to helping to establish eastern migratory flocks of both Whooping Cranes and Trumpeter Swans. For more information, write to Operation Migration, Box 280, Blackstock, Ontario, Canada LOB 1BO.

Flying Field

CRUNCH TIME

by Mel White

Winter is here, bringing cooler days, crisper air, a bluer sky, and the return of the birds that enliven the dormant woods and fields at this time of year

It so happens that I live in a place where winter actually does begin just about the time of the December solstice—an accident of latitude and elevation, I suppose, that brings climatic theory and reality into near-exact conjunction. People in Minneapolis may be shoveling snow on Columbus Day, and folks in New Orleans may have winter every third year on Lincoln's Birthday, but here in Arkansas we go by the calendar. In early December, we're outside in shorts and light sweaters; sometime soon, though, a front—the Front—rolls in from the Northwest and pushes autumn right out into the Gulf of Mexico.

For birders, this brings the same sequence of events, year after year: a week or two before the Christmas Bird Count (CBC), the weather is warm and beautiful, teasing us with the promise of a comfortable day in the field. Then the seasons change like a quick cut in a movie, and count day arrives with bitter wind and frozen noses. I'm not claiming that things are completely predictable; we are, after all, talking about the weather. One year—I think it was 1975—I actually did a Christmas count in a T-shirt, but, in general, CBC might as well stand for Coughs, Bronchitis, and Chilblain.

The memory of all those frigid dawns may have kept me, for a time, from appreciating how much I really enjoy winter birding. Like many people in the eastern United States, my sensibilities were permanently molded by my first spring migration: by the discovery that for a few weeks the woods were full of color and song, and that, through some alchemy of wind and warmth, certain magical but unpredictable days brought a glorious superabundance of birds, like one of those big waves at the beach that sends water up to your chest when it's been lapping lazily around your knees. Compared to a really good day in spring, the rest of the birding year seemed like just killing time, waiting for the chance for another rush.

As with so many other things, it was purely empirical evidence, not any sort of rational contemplation, that changed my mind about this. One fall day I heard the pure, clear whistle of the season's first White-throated Sparrow and abruptly realized that it made me just as happy as the mewling of spring's first Blue-gray Gnatcatcher. It meant that cooler days were coming, and with them crisper air, a bluer sky, and the return of all those little brown birds that enliven the dormant woods and fields.

One appeal of winter birds is simple anthropomorphism: they seem so much friendlier this time of year. Many of those beautiful spring singers are just passing through on their way to some Ontario spruce forest, and even our residents are paired off and busy, all wrapped up in passing their genes to a new generation. But in fall and winter, life is more sociable. Sparrows and finches seek each other out, larks and longspurs roam the countryside in big flocks, and chickadees, nuthatches, kinglets, and creepers band together in twittering cliques in the woods.

Winter birds seem to have more free time, and so we assume that they're on a kind of vacation from responsibility. The juncos at the feeder, we can't help but think, have purposely chosen our yard for their getaway, the way we'd look at a guidebook and choose Cozumel over Cancun. They were here last winter, we imagine, and they appreciated our diligence in putting out food, especially on the coldest days. They like the way we've neglected the arborvitae and let the privet hedge go wild. An interaction exists here that's missing from the one-way voyeurism of spring migration.

I've finally realized, too, that winter birding is just more relaxing than spring birding. In May, there's always that pressure to see as many birds in a day as possible. I feel guilty for every morning that I don't get up before daylight. In winter, there's no schedule to keep: the ducks are resting on the lake, the eagles soar at noon, the towhees are in the bushes all day long.

I associate a particular sound with winter birding, and it's not the honking of geese or the cackling din of one of our million-bird grackle roosts. It's the crunch of a frozen, plowed field under my boots as I cross the furrows to get to a hedgerow where a Harris's Sparrow might be mingling with the white-crowns, or a yellowthroat might be lingering. I'm with a group of friends (because winter birding is more sociable for people, too), and someone is always stopping to raise binoculars and mutter, "Just a Song," or "Just a Fox," until finally somebody calls out, "Hey, a Tree!" which is no big deal to folks up North but a hotline bird here.

Along with all this comes a sense of anticipation, of the impending unexpected, because this is the time when something really strange is likely to show up. It might be a gull from the Arctic or a confused hummingbird from California—winter is the season of the unpredictable. Typically atypical was the Fork-tailed Flycatcher that showed up here right in the middle of January in the cropland of the flat Arkansas River bottoms, which must have seemed like a close approximation of its South American savanna home. The lost bird, an adult with a beautiful long tail, hung around long enough to let everybody admire it, subsisting in part on sugarberries until a vicious sleet storm rolled through and no doubt did the bird in. Some scavenging 'possum never knew what an exotic supper it had that night.

Having said all that, I'll admit that the bird that truly symbolizes winter for me is neither an off-course rarity nor one of the friendly little finchy things in the fencerow. In fact, it's not one but two birds—the Cooper's Hawk and the Sharp-shinned Hawk—that would share the cover of my journal of winter birding. (The other North American accipiter, the Northern Goshawk, is a once-in-a-decade rarity down here and so, for me, recalls nothing but a single bird soaring over a glacial moraine in the Rocky Mountains, a thrilling but singular event.)

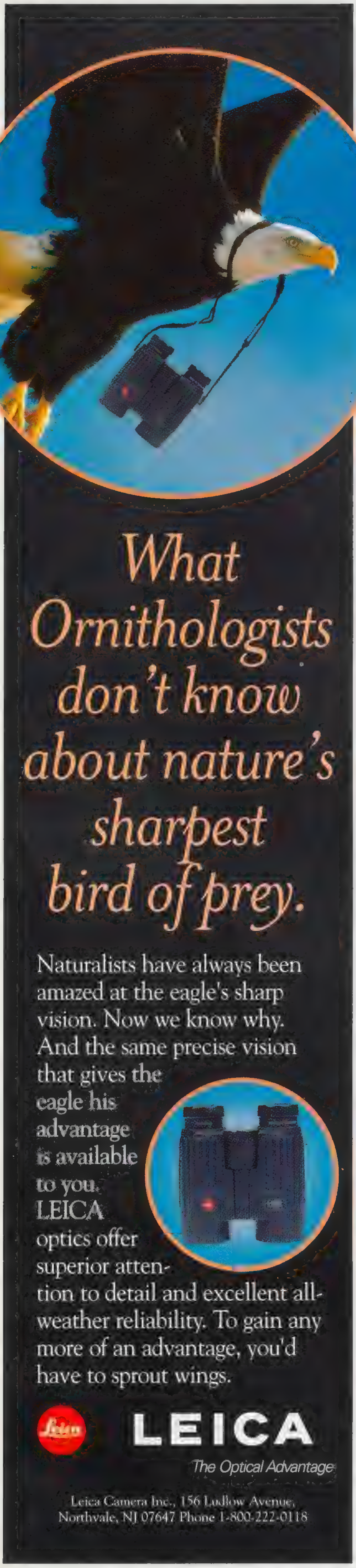
It's easy for me to rhapsodize about accipiters; I'm not a male cardinal, all screaming scarlet, trying to hide where there's no place to hide when a sharpie zooms in like an F-16. That's nightmare time for all the dickey birds—time to be a Winter Wren, scuttling through mouse holes in a big brushpile, drab and plain and shy maybe, but hunkered down and safe while everybody else is scooting for cover.

For those of us too big to be brunch, though, a glimpse of one of these air sharks is just the thing to liven up a gray winter day: a burst of frantic action as the hawk flies by—quickasthat!—and then dead calm. Where the trees had been full of fluttering and chirping just moments before, an unnatural silence lingers in the air as the survivors' hearts pound and they wait to see if the specter is truly gone. Just a reminder, if we needed one, that this isn't vacation time after all. Survival is a year-round struggle. Everybody gotta eat, and some gotta be eaten.

In winter where I live, both Sharp-shinned and Cooper's hawks are just rare enough to be special, just common enough to stay in the back of your mind as a constant possibility. Spend a day in the field and the odds are probably a little less than even that you'll see one bird, but there's no predicting where or when. Unlike Bald Eagles on the big lakes, Northern Harriers over the fields, or Red-tailed Hawks on the roadside telephone poles, accipiters can show up anyplace, trying to pick off a titmouse in the woods, a goldfinch in a hedgerow, a Mourning Dove in a soybean field, or even a Purple Finch at a backyard feeder.

ARTHUR MORRIS/BIRDS AS ART

"It's easy for me to rhapsodize about accipiters; I'm not a male cardinal, all screaming scarlet, trying to hide where there's no place to hide when a sharpie zooms in like an F-16."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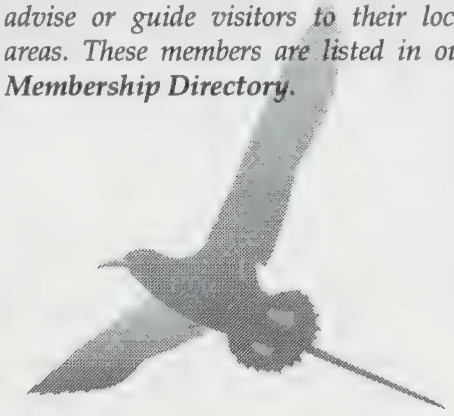

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An accipiter sighting isn't always a hit-and-run affair, of course. They do perch. You're sitting quietly on a park bench, taking a break from Christmas counting, when something rockets by, somehow weaving through the limbs at just under the speed of light without impaling itself, reminding you why the most common folk name for these birds is "blue darter." And then . . . it stops, sometimes just yards away. Seeing you, for sure, with its hawk eyes but not noticing any movement, the bird perhaps mistakes you for a shrub or a clump of debris left in the woods by a big flood. Slowly, you raise your binoculars, so you can actually study the things you're supposed to notice all the time: tail length and shape, head size, contrast between crown and nape, leg thickness. Or, if you're lucky, it's so small it has to be a sharpie, or so big it has to be a Cooper's, and you can forget all that stuff and just enjoy the gleam in its eye, the compact power of its body, and a rare moment of repose in this incarnation of perpetual velocity.

That kind of experience is the exception, though. I know I can count on one hand the times it's happened to me. No, when I think of accipiters and winter birding, this is how it happens: four or five of us are pushing through the pale-yellow grass in an opening in the woods, trying to flush up a Le Conte's Sparrow or a Sedge Wren. It's a frosty day in January, still early, and we have yet to find anything good. There's the usual chatter about the odds of turning up something rare or wishing we had a thermos of hot chocolate. We've just about reached the end of the field and everybody's thinking about where to go next when a sharpie shoots by like a feathered cruise missile. Intent on some luckless quarry, oblivious to its immobile observers, it passes by so close we can practically see the resolve in its fierce brow. A Blue Jay lets out a strangled squawk as it dives for the dirt, and then the woods are as silent as a church.

No one says anything for a long moment. I let out a heartfelt "Wow," and my frosty breath is still hanging in the air when the little hawk is just a blurry streak in my memory. ■

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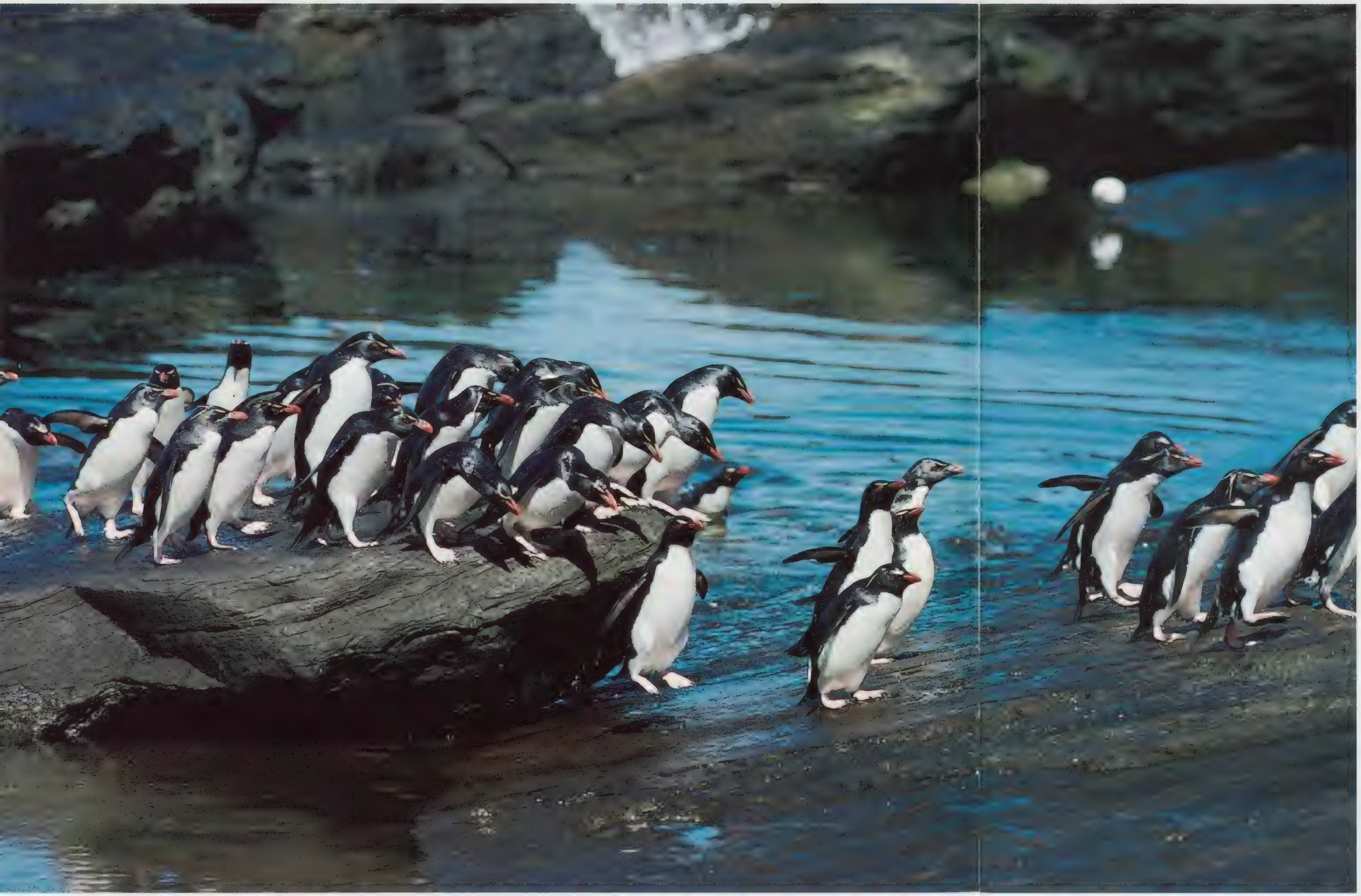
EXPLORING NEW ISLAND



A platoon of Rockhopper Penguins marches past on the rocky coast of New Island. This area provides excellent nesting and foraging habitat for these and five other species of indigenous penguins. At right, a nesting pair of Rockhopper Penguins.

Albatrosses, penguins, and sea lions abound at this remote outpost in the Falkland Islands

BY MICHELLE ALTEN

PHOTOGRAPHS BY WOLFGANG KAEHLER

On New Island, I wander down to a boulder-strewn shore. Rockhopper Penguins spring from the surf, jump onto a beach, then scale a precipitous cliff to their colony on a bluff. A nearby cluster of penguins prepares to plunge into the sea, while others shoot out of riotous waves. I stand mesmerized by the birds' comings and goings. Suddenly, right behind me, sounds an earth-shaking roar. I fumble over a rock and swing around. A ragged, 600-pound sea lion bull rises from behind a massive boulder, then charges past me toward a gathering of unsuspecting penguins sunning themselves on a rock.

Wild and barren, New Island rests at the westernmost edge of the Falklands Archipelago. The island group includes 420 islands and lies 373 miles east of Patagonia at the southern end of South America. New Island, which includes a 2,841-acre nature reserve, hosts

King Penguins (above) are one of the most impressive birds on New Island. Sixteenth-century explorer John Strong commented on their behavior in his log: "[the penguins] seemed to salute [our men] with a great many graceful bows . . . expressing their curiosity and good breeding."

an extraordinary variety of birds, including penguins, seabirds, waterfowl, and raptors. A one-week sojourn with daily exploring thrusts me into the natural life cycle of this wind-brushed island—a subantarctic oasis for breeding birds.

A walk through six-foot-high tussock grass brings me to the top of a palisade above the South Atlantic Ocean. A colony of Rockhopper Penguins stretches across the bluff, which engages in a constant dialogue with the sea. The penguins' raucous chatter competes with the shouting surf. The pungent odor of guano lingers about the nests, despite ocean breezes continuously sweeping across the colony. The stout rockhoppers, only 13 to 14 inches tall, are the smallest penguins found on the island. The striking birds with their spiky head feathers and flamboyant yellow crests are busily incubating eggs on their stone nests, gathering extra pebbles, and squabbling with neighbors. A few odd Macaroni Penguins have joined the colony.

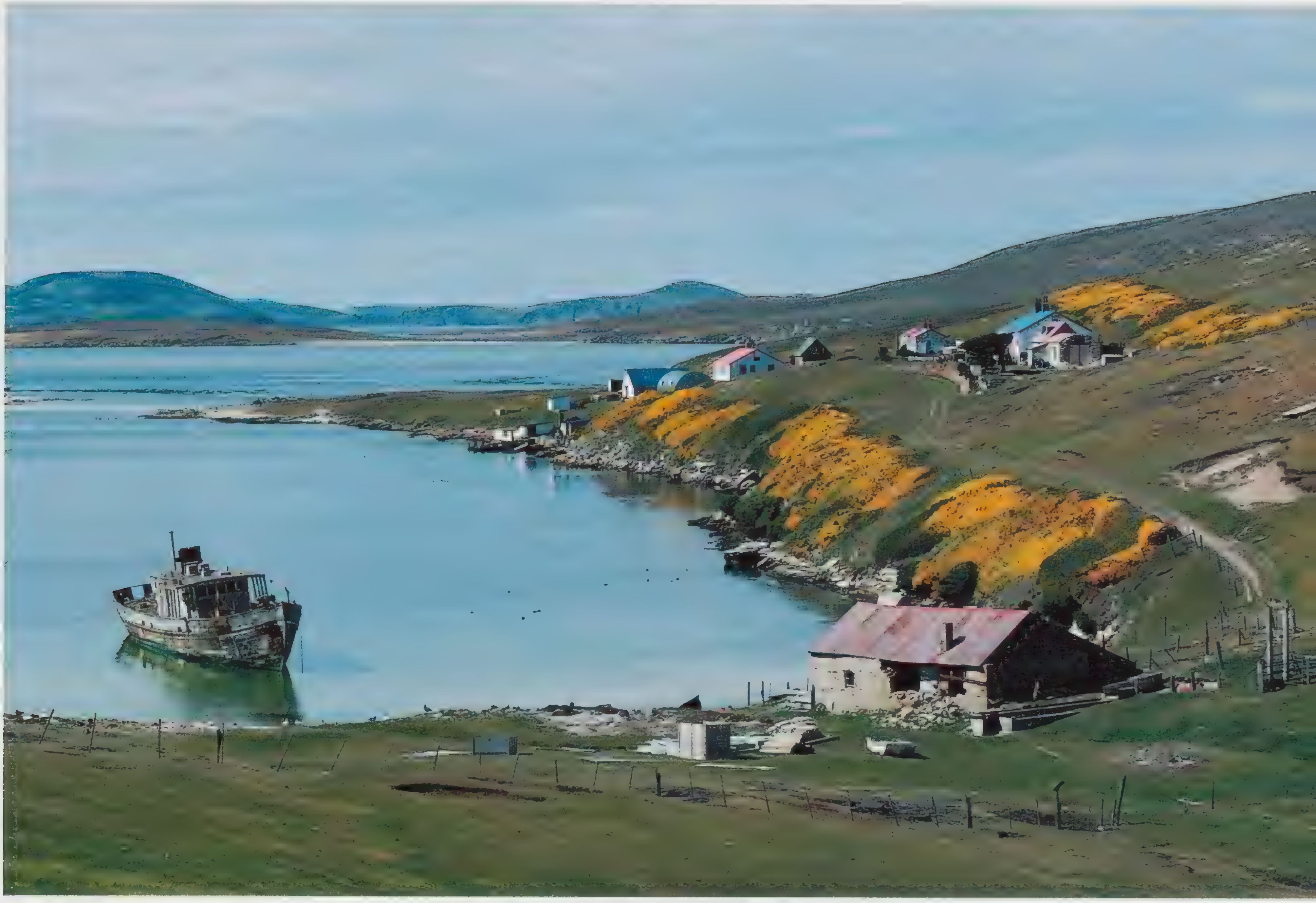
Six species of penguins and a myriad of seabirds breed in the Falkland Islands during the spring and summer months. The islands not only provide wide open beaches, rock cliffs, and bluffs that are ideal for nesting, but superb fishing grounds as well. The southern ocean current from Antarctica sweeps north through the Drake Passage at the tip of South America. A stream flows to the northeast, becoming the Falkland Islands current. As the stream splits to the east and west and pushes between the islands and ridges beneath the water's surface, upwellings form. The cold and rich Antarctic waters carry with them a bounty of plankton and krill. The lower salinity of these waters, along with the local upwellings, lift the nutrients to the surface, creating a readily available food supply for the penguins and other seabirds.

The Falklands also have the advantage of a climate substantially milder than bird havens to the south, such as the Antarctic peninsula and South Georgia Island. Here temperatures average 50 degrees Fahrenheit in the austral summer months of January and February and about 44 degrees Fahrenheit in the winter, around June and July.

On a strenuous hike, I fight walls of wind as I cross hills and meadows. At the northern end of the island I find Gentoo Penguins nesting on a gentle slope above a stone beach. The adults—which have gray plumage on their backs, splashes of white above each eye continuing over the head, and bold orange beaks—peer down at their fuzzy gray-and-white chicks. The awkward youngsters teeter on their oversized web feet, begging for food with their beaks wide open. Amid the crowd of gentoos stand four King Penguins, two-and-a-half feet tall, with silvery iridescent feathers and vibrant orange ear patches and mandibular plates. These handsome birds are among nearly 240 pairs of King Penguins that breed in the Falklands.

Many seabirds find ideal breeding grounds in the shadows of the penguin colonies. Alongside a rockhopper rookery, Black-browed Albatrosses

This ungainly looking King Penguin chick, at right above, seems to dwarf its parent as it begs for food. In addition to being a vast haven for penguins, seabirds, and other avian residents, the Falklands are also home to numerous seals, at right.



perch at the crest of a cliff. The advantage of the lofty site is apparent as a bird stretches out its wings, spanning nearly eight feet, catches the wind, and glides down to the sea. These elegant seabirds, with feathers the color of freshly fallen snow and dark seductive eyes, incubate their eggs on nests resembling chimney stacks. The impressive constructions grow each season as the breeding pair returns and adds a fresh layer of grass and mud. In the middle of the colony, a curious pair of rockhoppers has cleverly confiscated an abandoned albatross nest.

In the rockhopper colony, interspersed with the penguins, are Imperial Shags. The birds, which are well into their breeding season, tend to their three-egg clutches. One cormorant approaches its incubating partner with a beak packed with grass to reinforce the nest.

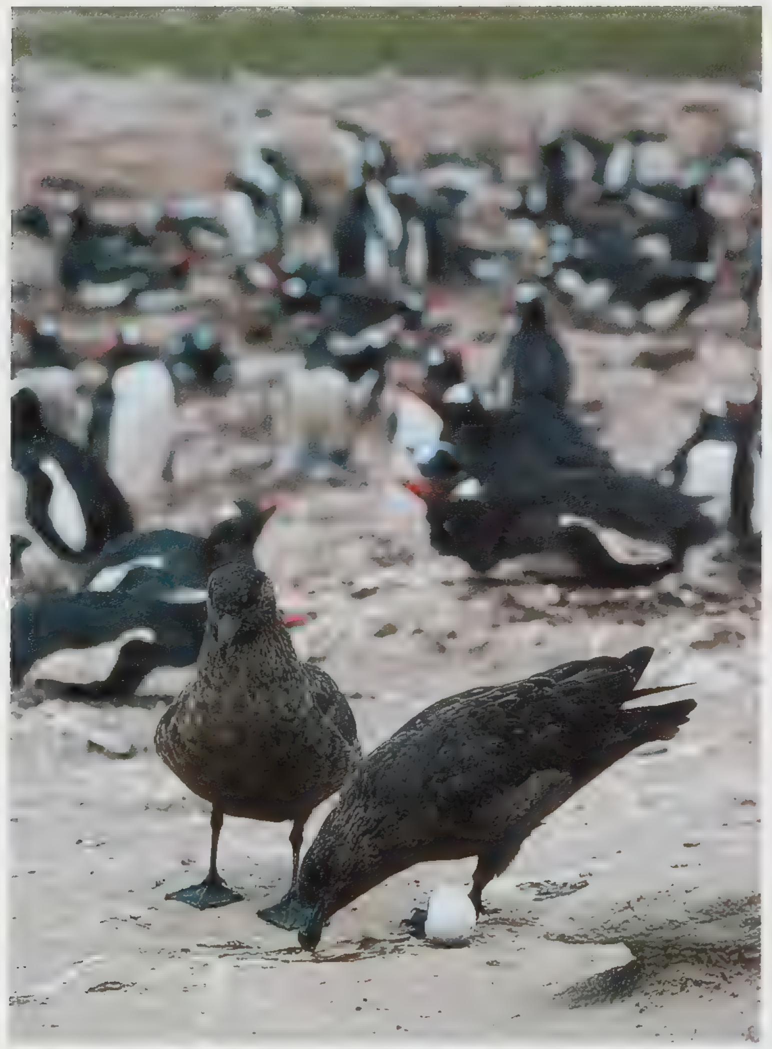
Like the other islands in the Falklands Archipelago, New Island has an uneven coastline with protected bays—popular feeding grounds for seabirds and waterfowl alike. One morning I ramble down to a beach. A family of flightless Falkland Steamerducks paddles through the water, churning up ripples in its wake. As I watch, a duck pauses, raises its tail in the air, and forages for shellfish beneath the surface. Nearby Magellanic and Blackish oystercatchers hop along the beach, peeping noisily with their long, lipstick-red beaks. From time to time, the birds poke in the sand in search of mussels and snails. Plovers scamper across the sand, sometimes disappearing beneath streamers of kelp.

All around New Island, the surf carries long green rafts of kelp. The local people are often called kelpers, in reference to the abundant seaweed that washes up on their shores. For many birds, the kelp and other aquatic plants provide the basis for their diet. Gaggles of Kelp and Upland geese saunter along beaches pecking at sea lettuce scattered at the water's edge.

Though many of the birds in the Falkland Islands are a part of the marine ecosystem, some geese take advantage of available fresh water. On New Island, I find Upland and Ruddy-headed geese seeking out plants such as milfoil and spike at a local pond.

As I explore the island, I hike across heath and grass meadows. An open view stretches

The dimming light of a subantarctic evening gives these Black-browed Albatrosses (at left) an eerie, otherworldly look. Perhaps it is no wonder that seafarers have long regarded albatrosses as omens of evil portent. New Island has a timeless quality. The whalers left some 70 years ago, and only a few relics of their trade remain. Now sheep ranching and a small amount of tourism are the island's only enterprises. The tiny settlement on New Island (above) is made up of only a few houses and barns.



before me as I march along the crest of a knoll. Suddenly a skua lets out a shrill cry and dive-bombs me, missing my head by only a few inches. I realize I have inadvertently approached the bird's nest, hidden somewhere in the grass. Unable to spot the eggs and nest and not knowing which way to run, I dash along the hilltop with an angry Skua swooping down after me. Here on New Island, I am the intruder.

Skuas aren't the only birds that craftily camouflage their nests. Slender-billed Prions pierce the side of a hill with tiny burrows clustered in a colony. But even though their eggs and chicks are carefully hidden in their underground nests, the prions need to beware of Striated Caracaras. These raptors, nesting close by, swiftly snatch up the prions as they fly to their holes at night.

Skuas and Striated Caracaras are common predators on the islands. As I watch a group of gentoos on their nests, a skua suddenly soars in and snatches an egg. Ready to begin pecking a hole in the shell, it is spotted by a Striated Caracara, which flies over to steal away the catch. A battle ensues. The caracara emerges victorious and is left alone to finish its meal.

At a rockhopper colony, a skua on the hunt for an unguarded chick spreads its wings, lowers its feet, and swoops in for a landing in the middle of the rookery. With earsplitting shrieks, the feisty rockhoppers charge the intruder, jabbing at it with their beaks and smacking it with their flippers. Defeated, the enormous bird takes to the sky.

Although birds on New Island must beware of birds of prey and an occasional renegade sea lion bull that chooses a meal of penguin over its usual diet of octopus and squid, they tend to show little fear of humans. But as I stumble upon a rusty old try-pot and the tumbled rock wall of a former penguin corral, I'm reminded that sealers and whalers once rounded up penguins here and cooked them for oil.

Visitors to the Falklands can see an amazing variety of birds. Above left, a Southern Skua devours a penguin egg. At left, a Gentoo Penguin tends its ever-hungry chick. Above, a Magellanic Oystercatcher perches on a rocky outcropping near shore. At right, colorful Long-tailed Meadowlarks sit atop a patch of yellow gorse.

The Falklands were discovered around the end of the 16th century, and by 1690, John Strong and his men made the first landing on the islands. The curious birds they found captured their imagination.

"The penguins gave us the first reception being mustered in infinite number on a rock. Upon some of our men landing, they stood, viewed, and then seemed to salute them with a great many graceful bows, with the same gestures, equally expressing their curiosity and good breeding," Strong wrote.

Others who followed Strong showed little interest in the desolate islands and their wild denizens. Even Charles Darwin, who made two visits—one in 1833 and another in 1834—felt little kinship with the Falklands. But by the 19th century, American sealers and whalers

Kelp Geese (above, a female at her nest) and human natives of New Island, nicknamed "kelpers," derive their names from the long green rafts of kelp that wash up on shore. For many birds, the kelp and other aquatic plants provide the basis of their diet.

came to New Island. Ian Strange, owner of part of New Island and author and illustrator of numerous books on the natural history of the Falklands, points out that New Island may have received its name at this time in reference to New England ports such as New Bedford.

The American whalers searched nearby waters for the prized southern right whales, and they boiled penguins, sending their oil to France for the leather industry. Eight cooked rockhoppers produced a gallon of oil. Of the islands' penguins, the rockhoppers paid the largest price in this venture, with some two million of them taken. Penguin eggs were also collected to feed the ships' crews.

Later, between 1908 and 1916, Scottish whalers set up camp on the island, capturing sei and fin whales. But the industry was shut down when the whalers headed south to set up base and sharpen their harpoons on South Georgia Island. Today, sheep ranching and some tourism are the only enterprises on New Island.

In the evening, I return to the island's settlement—a tiny group of houses and barns. A patch of brilliant yellow gorse stretches across the landscape. On a branch of this imported plant, a Long-tailed Meadowlark feeds its chick. As I look away into the distance, I spot a flock of sheep trotting down a hillside. A man on horseback and another on an all-terrain vehicle follow close behind. That night I join the sheepherders for a supper of mutton stew. Mutton, they tell me, is the main staple of the Falklanders' diet, and wool is the major export. I also learn that earlier in the day, two of their sheep died. By the next morning, Turkey Vultures have picked the carcasses clean.

Ian Strange (above right), naturalist, author, and part-owner of New Island, shows a Slender-billed Prion to a group of islanders. Strange purchased part of the island in 1971 and established a wildlife sanctuary and nature reserve. The Striated Caracara (at right) is a common raptor in the Falklands.

Although sheep are vital to the islanders, overgrazing is taking a toll on the islands' native vegetation. Tussock grass, clusters of leaves growing from pedestals that sometimes stretch up to 13 feet high, provides a nesting site for many species of birds, including the Austral Thrush, wrens, and prions. Other birds feed on the tussock panicles or on the abundant insects that thrive in this miniature ecosystem.

According to Strange, "Of the 62 or so regular breeding bird species in the Falklands, 46 use tussock either as a nesting or feeding habitat." But when sheep feed and trample hillsides and meadows, the fragile tussock grass is depleted. "The greatest single ecological disaster to occur in the islands has been the destruction of natural vegetation due to burning and the introduction of stock, particularly the destruction of tussock grass," he says.

Concern for the preservation of New Island and its wildlife motivated Strange to purchase part of the island back in 1971 and establish a wildlife sanctuary and nature reserve. Today ships call on New Island, and scientists and naturalists introduce visitors to the island's fascinating natural history, while sheep ranchers continue to tend their flocks.

But most of the time this island on the fringe of civilization is quiet. Almost everywhere I go I find myself alone with nature. As I wander through tussock grass and over open hills, I am chased by the cool wind, and the only sound I hear is the call of a caracara. ■

Michelle Alten is a freelance writer, specializing in travel, art, and conservation. Wolfgang Kaehler is an internationally renowned nature photographer.

SECRET PASSAGE

Though thousands of loons pass over the United States each year during spring and fall migrations, few people notice them

BY PAUL KERLINGER

Loons are popular birds. For many Americans, they have become the quintessential symbol of wilderness. You often hear them in the background of movie soundtracks, their eerie wails breaking the silence of a northern lake or forest. An entire national organization is dedicated to their conservation. And for a couple of years, they were the object of a minor fad, with their images appearing on a multitude of retail items, ranging from clocks and welcome mats to fine china figurines and loon decoy telephones. But, despite their popularity and the love people have for them, during spring and autumn migrations each year thousands of loons pass over North America virtually unnoticed.

BRIGETTE DE SAINT PHALLE

A Common Loon in winter plumage, above, feeds on a small crab. During migration, these birds often gather in huge numbers at staging areas for days or weeks at a time. When conditions are right, the birds will depart en masse, completing the next leg of their migration.

PAGES 20-21, COMMON LOON BY STEPHEN KIRKPATRICK

I began learning about loon migration by accident in the late 1970s while using radar to study migrating hawks in the hills west of Albany, New York. Radar cannot distinguish hawks from loons, but I confirmed through visual observations that many of my radar tracks were Common Loons. That data set yielded a considerable amount of new information about the flight behavior of migrating loons.

My reintroduction to loon migration came a decade later when I heard about the fantastic seabird migration along the Atlantic Coast at Avalon, New Jersey, about 20 kilometers north of Cape May. As I watched, a steady stream of more than 1,000 Red-throated Loons passed by within a half-mile of shore during a three-hour period. Most of them flew so low that they barely cleared the waves. During the past few years, studies conducted at Avalon by the Cape May Bird Observatory have provided a new window into the migration of both Red-throated and Common loons.

All North American loons (Common, Yellow-billed, Arctic, Pacific, and Red-throated) migrate. Nesting on lakes, saltwater bays, and rivers in the north woods and the Arctic, loons must move south in autumn. Because they cannot take off from land or ice, they must leave before the deep freeze arrives. They migrate southward overland and along coastlines until they find suitable feeding areas for the winter.

On the East Coast, Red-throated Loons migrate south as far as Georgia and northern Florida, whereas Common Loons often migrate into the Gulf of Mexico and to the coast of Texas and even northern Mexico. On the West Coast, all of the loons except yellow-billed winter from Alaska into Mexico, spending the winter mostly in the nearshore waters of the Pacific Ocean. The Yellow-billed Loon seldom winters farther south than British Columbia. Despite the fact that Pacific Loons breed in the eastern Canadian northland, most fly westward to winter on the Pacific Coast.

Loons often avoid flying over land, and it is safe to say that most loon migration is concentrated along the Pacific and Atlantic coasts as well as the coasts of the Great Lakes and other large lakes. I strongly suspect that large numbers of Common Loons also migrate along major rivers.

We probably know more about the migratory flight behavior of Common and Red-throated loons than any other species, because they fly in areas where there are lots of birders. Also, I was lucky enough to have radar in the right place at the right time so that I could study Common Loons.

Like most birds, loons vary their migration flight behavior depending on weather conditions and where they are. Some behavioral differences are obvious between Common Loon migration along the coast and inland. Migration inland occurs at higher altitudes and faster speeds. In the hills west of Albany, New York, and along the ridges of eastern Pennsylvania, loons fly mostly at 3,000 to 5,000 feet above the ground, which is probably the normal altitude of most loon migration over land. They also fly rapidly, with air speeds usually exceeding 40 miles per hour. Flying mostly with tailwinds to reduce the energy needed for migration, these birds at times achieve speeds greater than 75 miles per hour. This high, fast flight of migrating loons is not obvious to most observers, although hawk watchers spot them regularly in the northeastern United States.

Along the Atlantic Coast, the migration of both Common and Red-throated loons is much easier to see because they pass by in loose flocks of up to 15 individuals, flying just above the waves. At the 7th Street Jetty in Avalon, New Jersey, loons sometimes fly close enough for observers to hear their wings cutting through the air, offering great views. Most coastal migration is below 200 feet and often it is below 15 feet. Air speeds are slower than inland, ranging between 32 and 40 miles per hour. Interestingly, loons maintain faster airspeeds flying into headwinds and slower airspeeds with tailwinds. This energy-saving behavior is found in many other species of migrants and is analogous to the strategy used by aircraft pilots to save fuel.

Migrating loons frequently fly with their mouths wide open in warm weather. I have seen this frequently among Common Loons flying through Cape May in September. It is likely that this seemingly bizarre behavior is an adaptation for reducing high body temperatures during flight. By opening their mouths, they cool themselves via evaporation of water from the mucous membranes of their mouths and respiratory systems.

Flying mostly with tailwinds, these birds at times achieve speeds greater than 75 miles per hour.

Loons may be subject to overheating during flight because they are such large birds, much larger than people realize. Though the wingspan of a Common Loon is comparable to that of a Red-tailed Hawk, they can weigh as much as an eagle. Their bulk is considerable, often more than 4,000 grams (8.8 pounds) when they're fat. Their wings are pointed but not proportionately long for their weight. Because loons have lots of volume and not much surface area, they may overheat easily during flight. This explains observations of their open-mouthed flight. Although bulk may promote overheating in flight, there is an advantage to having lots of bulk without much surface area. These birds must sit in cold water through much of the year and their bulk, combined with fat and insulating plumage, prevents heat loss.

Like most migrating birds, loons do not complete their migration in one flight. They make stopovers, sometimes gathering in huge numbers in staging areas. Most birders know about the enormous concentrations of shorebirds that gather to eat horseshoe crab eggs along the shores of Delaware Bay during spring migration, but few know that the mouth of the bay is an important staging site for thousands of Red-throated Loons. From late February through early April, Red-throated Loons are visible in the rips that form off Cape May Point.

A ferry ride between Lewes, Delaware, and Cape May, New Jersey, can reveal hundreds, perhaps thousands, of loons. Observers from the Cape May Bird Observatory have estimated that as many as 10,000 Red-throated Loons feed in the mouth of Delaware Bay each spring. As the tide moves them along the rips, hundreds of loons line up, diving for the abundant fish (and sometimes crabs), which become especially vulnerable to the loons in the strong currents. On an outgoing tide, birds drift from the bay into the ocean and on an incoming tide they do the opposite. When they reach the end of a rip, they fly upcurrent—sometimes more than a mile—and drift back over the same route. They repeat this procedure over and over again as they ready themselves for the long flight back to the Canadian north.

Just prior to their disappearance from coastal New Jersey, you can often hear their plaintive yodeling. It is weaker and less melodic than a Common Loon voice. Calm days with no wave action are the best times to listen, because the birds are close to shore and it is quiet enough to hear them. These are the beginnings of courtship, despite the fact that these birds have a thousand or more miles to fly to reach their nesting grounds.

Other staging areas have mostly Common Loons. These are usually lakes that act as stopover sites between the north woods and the Atlantic Coast. At Whitefish Point, in Lake Superior, as many as 10,000 loons have been counted in a single autumn migration season. At Cayuga Lake, in central New York, hundreds—and occasionally thousands—of loons can be seen passing over on some autumn mornings. During one morning this past autumn, more than 6,000 Common Loons were counted by local birders documenting the migration (see sidebar at right). These birds fly southward toward Chesapeake Bay, where many will spend the winter. Others may just use the bay as another staging area, moving farther south a few weeks later.

The eastern ends of the Great Lakes are probably also important staging areas for Common Loons during autumn. Birds that I studied with radar in autumn were coming from the west-northwest, which is the direction of the closest part of Lake Ontario. They were headed east-southeast, toward the Atlantic Ocean. In spring, some migrants tracked on radar were headed back toward Lake Ontario, and others were headed more directly northward.

Not all Common Loons make round-trip migrations every year. After their first southbound migration at the age of about three to four months, most Common Loons do not migrate back north until they are nearly two years old. (This is similar to the migration

LOONS OVER CAYUGA LAKE

It had been a slow season for migrating loons. Day after day this past fall, Bob Meade—coordinator of the Taughannock State Park Loon Watch—had trudged out to the lookout site on New York's Cayuga Lake and scanned the skies for migrating loons, often in vain. Barely a trickle were passing over. By the end of the first week in November, he'd only recorded 803 of them, and he saw most of those on one day—Saturday, November 3. In previous years, we had counted as many as 3,500 by this date.

Everything changed on November 10, 1997. On that bleak Monday morning, all previous records at this loon watch were demolished as a whopping 6,064 loons passed by overhead. By the official sunrise at 6:50 A.M., Meade had already counted 1,537 loons and then, in the next 15 minutes, he saw an additional 2,835. At the same time, on nearby Seneca Lake—another of New York State's Finger Lakes—I counted 1,119 Common Loons, 920 of them in the first half hour.

This was the fifth straight year of counting migrating loons at Taughannock State Park. It's a perfect place to count them. Cayuga Lake—a long, narrow strip of water, 40 miles long and barely a mile wide—bends to the southeast at the park, and the loon flight typically continues southward over land—away from the scanning eyes of the many birders and ornithologists who regularly visit the south end of the lake at Ithaca, just eight miles away.

We originally started watching loons at Taughannock Park in 1992, almost by accident. At that time, big-year fever had been sweeping through the local bird club, and several of us were trying to see how many species we could find in the Cayuga Lake basin by the end of the year. Because a Parasitic Jaeger—a regional rarity—had been seen from the park the year before, some of us started birding there regularly, hoping another jaeger or other rarity might show up.

Our first efforts watching loons at Taughannock Park, though informal, were very productive, documenting the migration of almost 5,000 Common Loons passing through the area. The following autumn, in 1993, Bob Meade revised the counting procedure so that we would tally loons in 15-minute periods beginning a quarter of an hour before sunrise. He instituted clipboards mounted with watches and a standardized form for documenting totals. This gave us a consistent means for studying the loon passage and a better understanding of the pulsed nature of the flight. We found that the morning loon flights often had a double-waved character—an initial wave of loons arising from Cayuga Lake and a flight about an hour later, probably from Lake Ontario.

Enthusiastic loon-watchers Tom Nix and Steve Kelling joined the loon watch that year and helped run the count through late November. We tallied nearly 8,000 loons. We attributed the higher total to better coverage at the loon-watch site. Steve Kelling really got loon fever by the end of 1993, and he pushed us all to put together our first paper reporting data from the watch, which appeared in *The Kingbird* (vol. 96, no. 3), the journal of the Federation of New York State Bird Clubs, Inc. He and Tom fanned our enthusiasm for counting loons, and the 1994 season brought even more organization to our loon watch. In addition, some of us branched off to count loons at nearby Seneca Lake.

Interest in the Taughannock watch continued to grow, and it was not unusual to find a dozen or more people scanning the skies on good flight days. We counted nearly 6,000 loons from Taughannock Park in 1994. Although that number was down somewhat from the previous year's total of almost 8,000, the fall of 1994 was abnormally warm. After a sizable flight had been documented by accident in mid-December, we speculated that we had stopped counting too soon, and that many loons had remained north longer because of the mild weather.

The following year, 1995, many more people participated in the count, but the early season totals were fairly low. By November 22, we had tallied only 4,000 loons. As Bob Meade and I stood at the watch the next day, we were wondering how this season would stack up with the others. Just as in 1992 and 1993, loon numbers had peaked around Halloween, but, strangely, the previous two weeks had brought relatively few loons—despite the passage of several weather fronts from the north. Had we somehow missed some flights, or were loon numbers crashing? We had seen at least 200 loons pass over Cayuga Lake in the early morning. I remember being excited and thinking that if we had a decent Lake Ontario flight we might break 1,000 for the day and 5,000 for the season, which would at least keep us in the ballpark with previous years.

But on that morning, we were amazed to see more loons flying over than we had ever seen before at the watch. Loons were coming through so thick that we barely had time to write down our totals. Nearly continuous groups of loons stretched across the sky in quarter-mile-wide fronts often containing more than 200 loons. Other flocks of more than 50 passed over in loose formations resembling World War II bomber squadrons.

TIM GALLAGHER

These hardy birders gathered to count loons at Taughannock State Park one brisk November morning this past autumn. The birds—mostly Common Loons—usually fly high overhead, sometimes several hundred meters above the observers.

A short time later, emotionally exhausted and half frozen by the brisk November morning on the lake, we drove back to Bob's house to inhale buckwheat pancakes and figure out the total. We had counted 3,338 loons in two hours and 15 minutes, 1,450 of them in one 15-minute period—more loons by far than we had ever counted at Taughannock Park in one day. The total for the day surpassed our previous one-day maximum total by 2,000 loons. That record stood until November 10, 1997.

We counted more than 8,000 loons in 1995 and more than 10,000 in both 1996 and 1997. With the Seneca Lake and Cayuga Lake loon watches now in full operation, we may well be able to document 20,000 or more Common Loons—perhaps half the estimated population of the species that winters in eastern North America's coastal region—passing through the Finger Lakes region each year. —*Bill Evans*

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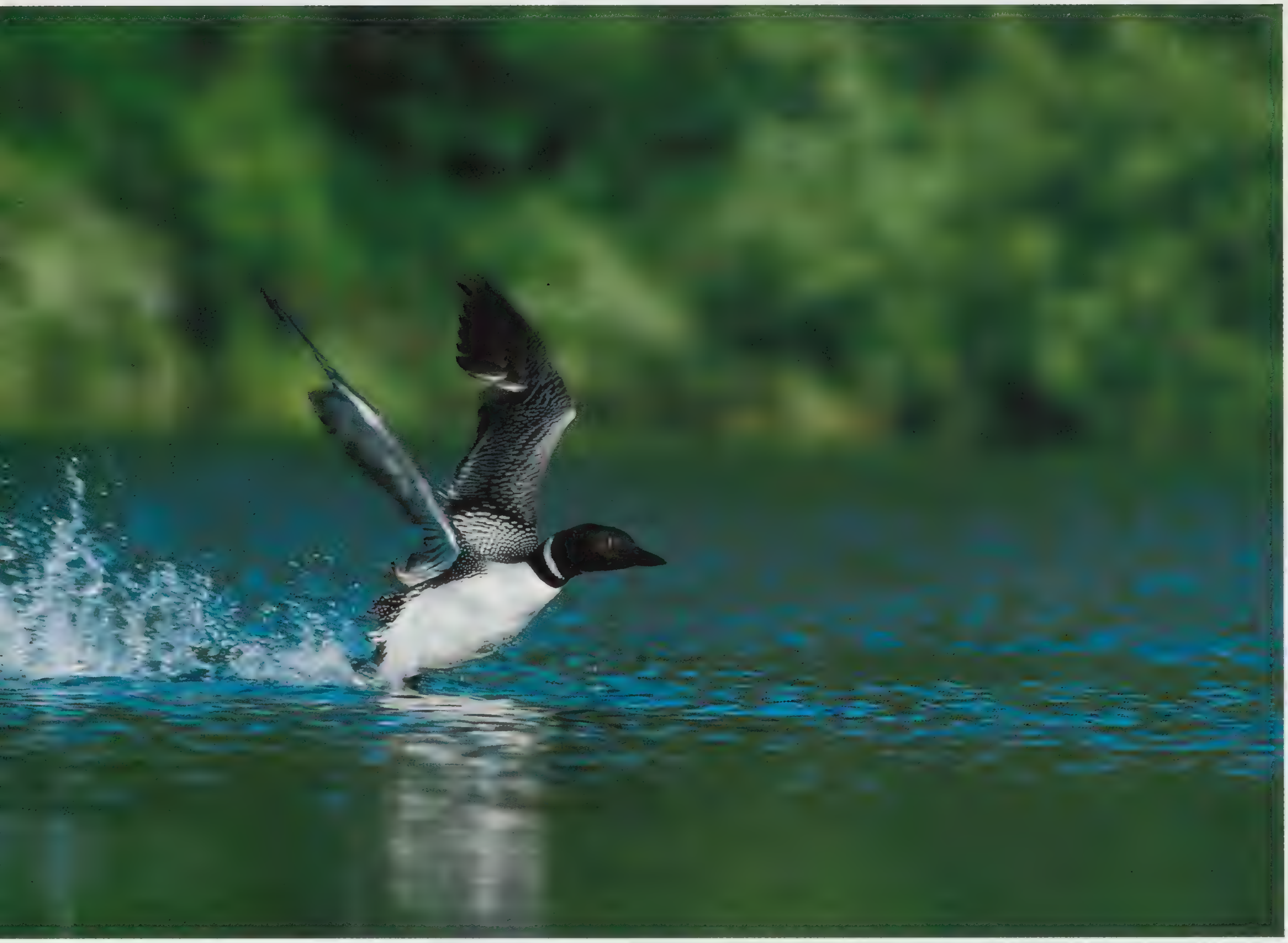

JOE McDONALD

Unlike dabbling ducks, which can fly virtually straight up from a small pond, Common Loons need a great expanse of water to enable them to build up enough speed to become airborne. They must leave their northern homes before the lakes and rivers ice over.

pattern of first-year Ospreys, which do not return north until they are nearly two years old.) During the interim, they spend their summer along the East Coast of the United States and Canada. In coastal New Jersey it is not uncommon to see loons two or even ten miles offshore in June, July, and August. Whether or not these birds have seasonal movements between their first migration and their northward migration just before they are two years old is not known. In fact, we know little about this period in a loon's life cycle.

We know far less about loon migration along the West Coast, although it must be considerable. I would bet that headlands that jut into the Pacific, like Cape Flattery in northwestern Washington, would be decent sites to watch loon migration. There are probably more wintering loons on the West Coast than the East Coast, but they are distributed along the vast coastline between Alaska and Mexico.

If you want to see loon migration, there may be a place close to you. One of the best places to see migrating loons is at Avalon, near Cape May, New Jersey, where more than 50,000 Red-throated and 4,000 Common Loons pass each autumn. On the Great Lakes, loons can often be seen migrating along the shorelines in both spring and autumn. Whitefish Point in upper Michigan provides excellent loon watching. In central New York, you may want to watch at Cayuga Lake, or one of the other Finger Lakes, which undoubtedly host many migrating Common Loons. Along the Atlantic Coast of eastern Canada and the northeastern United States, Red-throated and Common Loons can be seen from mid-October until December. The farther south, the later loon migration peaks. Wherever you see them migrating, they will impress you with their powerful and graceful flight. ■

Paul Kerlinger is the former director of the Cape May Bird Observatory and is now an environmental and ecotourism consultant. His 1995 book, How Birds Migrate *(Stackpole Books, Mechanicsburg, Pennsylvania), is an easy-to-read and informative account of bird migration.*

BLACK-NECKED STILTS BY TIM GALLAGHER

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BIRDING AND ECOTOURISM

The lure of birding dollars is creating a strong incentive to save bird-rich habitats worldwide

BY KRISTI G. STREIFFERT

Have you ever gone birding beyond your frontyard gate? If so, you are the subject of a George Washington University short course that includes lectures on "Innovative Techniques for Capturing Specialized Markets" and "Ecotourism Planning and Management."

Have you ever spent a night away from home while birding? Then you are of vital interest to the Ecotourism Society, a group of professionals working to make responsible tourism a tool for conservation and sustainable development worldwide.

Have you ever planned a vacation around birding? Then the folks in Virginia Beach, Virginia, want you to consider visiting their marshes.

Virginia Beach, the most populous city in Virginia, covers 310 square miles and houses a half-million people. The "news" is that the city boundary encompasses not only curio shops and oceanfront rooms, but also thousands of acres of saltwater and freshwater marshes, along with the waters of the Chesapeake Bay.

A few years ago, the soggy marshes of a coastal resort like Virginia Beach might have been considered merely mosquito nurseries by a tourism industry accustomed to the typical T-shirt-shop-patronizing tourist. Now, however, Virginia Beach's Colonial Inn offers "Birdwatching Exploration" packages. The nearby Chesapeake Bay Bridge-Tunnel publishes press releases acclaiming the birding opportunities along the bridge-tunnel. And the Virginia Beach Convention and Visitors Bureau sponsors an annual "Southeastern Virginia Ecotourism Symposium."

What was once considered a liability of undeveloped land is now seen as a tourist attrac-

CLIFF BEITTEL

According to the American Birding Association, migratory birds attract 100,000 birders each year to Cape May, New Jersey (right), where they spend $10 million per annum.

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ARTHUR MORRIS/BIRDS AS ART

City officials across the United States are beginning to see that undeveloped areas they once viewed as "problems" are actually bird habitats that attract scores of birders. When birding habitat is highly valued by the economic forces-that-be, improvements to habitat, such as the creation of more refuges, soon follow. Above, birders get close-up views of Snow Geese from the viewing platform at New Mexico's famed Bosque Del Apache National Wildlife Refuge.

tion. Bird habitat is becoming highly valued by the economic forces-that-be.

Proof can be found in a petition filed by more than 100 businesses in and around Georgetown, South Carolina, in support of a proposed 50,000-acre national wildlife refuge. "Attracting birders and other nature-based travelers was one of the stated reasons why local business was so enthusiastic about the refuge," says David Gordon, a U.S. Fish and Wildlife Service biologist and Georgetown resident. "The petition and broad-based community support helped convince local governmental bodies to back the refuge." The new Waccamaw National Wildlife Refuge received federal approval in July 1997.

Across the country, Grays Harbor, on the coast of Washington, draws up to a million shorebirds during spring migration. The birds in turn draw birders, especially during the Grays Harbor Shorebird Festival in late April. Local businesses have benefited from the travelers' dollars in recent years, but they see this boon being threatened by a proposed steel mill development adjacent to the prime viewing area.

Grays Harbor Audubon president David Beatty says that although habitat conservation here has not occurred as a direct result of tourist dollars, "if we get mitigation because a steel mill is coming, some of it will be due to the positive economic impact of tourist dollars."

People arguing for mitigation (such as habitat preservation and improved birder access) based on the economic impact of tourism at Grays Harbor have plenty of ammunition. The American Birding Association (ABA) provides statistics indicating that more than 63 million Americans now watch birds as a recreation. And a 1996 survey by the U.S. Fish and Wildlife Service found that American wildlife watchers (of which the ABA says 80 percent are birders) spent $31 billion on wildlife-related recreation that year.

The flurry of numbers can be as exciting and overwhelming as a warbler fallout on the Gulf Coast in spring. The ABA also says that migrating birds attract 100,000 birders to Cape May, New Jersey, where they spend $10 million a year. And 1993 figures show that Arizona's Ramsey Canyon attracts 30,000 visitors a year, with $5 million a year pumped into the local area.

But the numbers climb highest in Texas. It's only appropriate that the leader of the pack in tying economics and conservation to birder dollars is Texas. The state's 600-plus bird species make Texas the top birding destination in North America. Smaller communities such as Harlingen, Texas, are finding birding an economic blessing. Harlingen drew more than 2,000 visitors from 41 states and Canada to a recent Rio Grande Valley Birding Festival. The birders spent more than $1.6 million that week. Nearby McAllen, Texas, receives more than $14.4 million each year from visitors to the Santa Ana National Wildlife Refuge. And the famous migrant trap, High Island, Texas, sees more than 6,000 human visitors during the spring. These birders spent $2.5 million traveling to and staying in the region.

All of these dollars translate directly into habitat protection, says Madge Lindsay, outreach coordinator for the Nongame and Urban Wildlife Program of Texas Parks and Wildlife. That's why, for the first time ever, Texas is making a point of marketing itself to traveling bird watchers. Free trail maps to the Great Texas Coastal Birding Trail showcase public and private birding sites along the Texas coast and provide information on local hotels, restaurants, and other goods and services.

Coastal communities are excited because they've seen the statistics showing that bird watchers traveling the Texas coast spend millions of dollars. And the program is resulting in heightened awareness of the value of bird habitat by those local communities.

"The picturesque shrimp fishing village of Palacios, Texas, had a 'problem' wetland," says Lindsay. "City officials thought it was horrible and had been trying to divert it into a ditch. With the birding trail, awareness dawned that this 'problem' was actually bird habitat and that birders were using it a lot. Now that it is on the Birding Trail and a viewing platform has been added, peoples' attitudes have changed.

JOHN HEIDECKER

More than 63 million Americans now watch birds as a recreation.

TIM GALLAGHER

More than 80,000 hawk watchers visit Pennsylvania's Hawk Mountain (left) each year to enjoy breathtaking views of raptors in flight as they journey south. On this sunny midweek afternoon in late October, the North Lookout's rugged outcropping of rocks is crowded with visitors, young and old, scanning this spectacular panorama, where raptors often glide within a few meters of observers. Many businesses in birding hotspots are making major efforts to attract birders. Above, a sign promoting DJ's diner in Point Pelee, Ontario, Canada.

LAURA ELAINE MOORE

Birders are, in many ways, the best ecotourists there are. They know what they want.

Texas is a top draw for birders, thanks in large part to birds like this Altamira Oriole (above), which is found nowhere else in the United States. Texas is also leading the way in marketing itself to bird watchers. Still in its infancy, the Great Texas Birding Trail program provides maps, signs with site numbers, and highway directional signs leading to birding hotspots. Florida, Alabama, Mississippi, and Louisiana are soon to follow in the Lone Star State's footsteps; Mexico is also considering continuing the trail along its Gulf Coast.

Birders' travel dollars have resulted in an advance in conservation thinking on the part of city officials."

She cites other examples, too. "Since we started attracting birders with the Birding Trail, the Port of Aransas purchased an ephemeral wetland that is next to a road and was somewhat degraded." The newly appreciated wetland has been the subject of restoration efforts, and native plants have been added. Trail organizers also constructed a viewing gazebo and parking area, so visitors could easily enjoy sightings of the Roseate Spoonbills and other long-legged waders that are nearly always present.

The Great Texas Coastal Birding Trail program, still in the development stages (with new maps coming out every year or so), is coordinated by the Texas Parks and Wildlife Department's Nongame and Urban Wildlife Program and by the Texas Department of Transportation local highway districts, with funding from the Intermodal Surface Transportation Efficiency Act. The trail provides maps, signs with site numbers, and highway directional signs leading to great birding areas. Viewing platforms, boardwalks, and hummingbird gardens are common along the trail.

A marketing committee made up of a cross-section of representatives from the communities along the trail is making plans to improve access to accommodations, provide a newsletter with sponsor advertising, and develop products and a web site. Total trail costs are an estimated $1.5 million.

And neighboring states are taking note. "Before too long," predicts Lindsay, "the entire Gulf Coast will have a birding trail." Florida has already hired a bird-trail coordinator and similar efforts in Alabama, Mississippi, and Louisiana are in the planning stages.

"Even Mexico has expressed interest in putting in a trail down its side of the Gulf Coast," says Lindsay.

"Birders' travel dollars do make a difference internationally," says Megan Elper Wood, the president of the Ecotourism Society. "Birders are, in many ways, the best ecotourists there are. They know what they want."

Wood finds birders' interest in travel extremely beneficial to private landowners. "In Central and South America, private landowners—usually ranchers—have large parcels of land and they face difficult economic decisions. Do they go with more and more cattle or do they preserve the lands for the birds?"

TOM STREIFFERT

ARTHUR MORRIS/BIRDS AS ART

If you build it, they will come. Famed migrant trap High Island, Texas (above), and other communities throughout the United States are discovering that by building boardwalks, blinds, and informational boards for birders and other wildlife enthusiasts, payback can be sweet when they also offer a good meal, a bed, gas, and books to this well-to-do flock of visitors.

In Venezuela, on the 300-square-mile Hato Pinero ranch, ranchers decided to set aside two-thirds of the ranch for nature-based travelers and biological research. Birders find a private reserve that is "exclusive" in the positive sense of the word.

"The place is set up specifically for birding," says Wood. "The geographic region in this part of Venezuela is called the *llanos*—it is flooded for several months, then recedes to ponds and pools that attract birds like Jabirus and Maquari Storks." The private landowners found that going with ecotourism was a win-win decision, says Wood. "The habitat is preserved, the birds are preserved, and the tourists are ecstatic."

"Birding organizations need to provide private landowners and chambers of commerce and businesses the data and case studies they need to prove the value of birders' tourist dollars," says the ABA's Conservation Director, Paul Green. "Helping communities to recognize and to quantify the economic value of wildlife resources will ensure the survival of those resources. Local communities discover that great benefits can come from developing an infrastructure designed specifically for wildlife watchers. Communities can, for example, build boardwalks, blinds, and informational boards; they can also take steps to ensure that birders and other wildlife enthusiasts can satisfy their requirements for a good meal, a bed, gas, and books."

The Texas Parks and Wildlife Department has been doing just that. They've produced a brochure that tutors local communities on how to hold bird watchers for an overnight stay. The "Questions and Answers" brochure states: "Bird watchers don't require large capital investments to lure them in—they just want birds! Help by keeping plenty of good bird habitat available. You need to ensure that you have good local birding parks, wildlife refuges, wildlife management areas, natural and restored habitat, and good management for birds."

The tutoring even extends to field identification: "This fairly wealthy flock . . . always has binoculars around their necks and usually wears T-shirts with birds on them, khaki shirts and pants, and hiking boots. They are great tourists to have."

So if you bird the Great Texas Coastal Birding Trail, be sure to wear your "field marks." ■

Kristi G. Streiffert is a freelance writer based in Coulee Dam, Washington. She frequently writes for this magazine.

A GUIDE TO SPOTTING SCOPES

BY DAVE ROSS

Lab reviewers search for the best and brightest birding scopes currently on the market

A stiff breeze blew from the Northwest, and the low afternoon sun sparkled across Cayuga Lake on this warm Indian summer day. Not far from the lakeshore, six men crouched in a row, staring steely-eyed through strange cylindrical objects mounted on tripods. Grim-faced and determined, they resembled SWAT-team riflemen lined up on a rooftop during a hostage crisis. Occasionally, they would stand, switch positions, make adjustments on the cylinders, and confer with each other. But unbeknownst to suspicious passersby, these men were not awaiting an invasion or a command to open fire. They were evaluating optical equipment for birding. Assembled in front of them on a ragtag collection of aging tripods sat some of the finest spotting scopes in the world. Sleek, rugged, superb instruments (some of them decked out with all the trappings of a piece of military equipment), built to withstand the rigors of uncontrolled, combat field conditions and to perform exquisitely—to do the job at any cost.

And because most of the scope review team were either current or former members of the "Sapsuckers," the Lab's elite big-day team that competes each year in New Jersey's famed World Series of Birding, they were definitely combat veterans. Sapsuckers present included John Fitzpatrick, director of the Lab; Kevin McGowan, associate curator of the Cornell bird collection; Ken Rosenberg, captain of the Sapsuckers and assistant director of the Lab's Conservation Science program; Steve Kelling, the Lab's webmaster; and Tim Gallagher, editor-in-chief of *Living Bird* and a former Sapsucker captain. Also participating in the review were Steve Pantle of the Library of Natural Sounds (LNS), Ron Rohrbaugh of the Lab's Education Program, and Dave Ross of LNS.

My aim was to get the unabashed opinions of these hard-core, dyed-in-the-wool birders, whose very existence depends on their keen powers of observation and their analytical ability. Not the least quality of such people is having a sharp, discerning eye, with a visual acuity that can be magnified exponentially by the right tools—fine optics, that is.

I have to admit at this point that our review team did have certain biases. Let's face it, hardcore birders are not like normal people. They think nothing of trudging through barren, windswept arctic wastes, scorching deserts, and muddy marshes or of standing next to stinking sewage ponds or garbage dumps for hours—no matter how unpleasant the weather or how poor the light—for the chance of glimpsing a rare or unusual bird. And they expect their optical equipment not only to be able to survive in these conditions but also to excel, providing a bright, crisp image, anyplace, anytime.

Naturally, our reviewers were drawn to the most expensive scopes because—at least for the purposes of this review—money was no object. All things being equal, what birder wouldn't rather use a $3,000 scope than a $300 model? Some of these instruments represent the crème de la crème of spotting scopes, costing well over $1,000. The point is that you should definitely evaluate your own birding needs and see what will work best for you within the constraints of your birding budget. Not everyone needs all of the special features these top-of-the-line scopes boast. If you never go birding in adverse weather conditions, for example, then it might not be worth the extra cost to you to buy one of the fully waterproof, immersion-tested scopes available.

Most of the scopes we looked at offer a full range of interchangeable eyepieces, which for most models are as easy to switch as lenses on a 35mm single-lens-reflex camera. To simplify this review, however, we decided to compare each of the scopes using only a 20x-60x zoom eyepiece if one was available for the particular model. Zoom eyepieces in that magnification range have become increasingly popular in recent years because of their convenience in the field—you just scan at low power and then zoom in when you spot something interesting. And high-quality zoom eyepieces seem to provide as good an image as fixed-magnification eyepieces. Carrying a pocketful of eyepieces of varying powers and having to switch them at crucial times is something few serious birders want to hassle with in the field, especially in a big-day competition. Some less expensive scopes may be sharper with a fixed-magnification eyepiece, but we felt it would be a fairer comparison between scopes if they all had to use a similar eyepiece. With some scopes—especially those built by companies that make astronomy telescopes—this was impossible. Either they didn't have a zoom eyepiece available or they didn't have one in the 20x-60x range, so it was difficult to compare them fairly with the other

TIM GALLAGHER

Some of the better scopes available are fully sealed, nitrogen purged, and immersion tested, making them virtually weatherproof. Above, scope reviewer and Sapsucker Steve Kelling puts an Optolyth TBG 100 HD through its paces in the drizzle at New York's Montezuma National Wildlife Refuge.

BHL

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scopes. We've included these scopes in a separate section. Many of the test scopes performed well at the lower powers but, to separate the wheat from the chaff, we compared their resolution and clarity at 60x, when only the best optical instruments delivered an acceptable image.

Scope Wars

It's interesting to trace the evolution of the birding spotting scope during the last 15 years or so. Everyone used to have Bushnell Spacemaster scopes and swore by them as field-birding tools. Then Kowa took the general Porro-prism telescope design a quantum leap forward with their TSN-2 spotting scope and its fluorite-glass cousin, the TSN-4. These scopes had whopping 77mm objective lenses in front (compared with the Spacemaster's 60mm lens), which allowed much more light to pass through the scope, brightening the image considerably in low-light conditions. These scopes were bright and sharp and could be purchased with one of the first decent 20x-60x zoom eyepieces.

The TSN-4 was a top contender in the Lab's scope reviews for many years. But it was eventually eclipsed in the scope wars by other comers, especially Swarovski, which introduced an 80mm scope (the ST-80) a few years ago and a superb 20x-60x zoom eyepiece that is great for eyeglass wearers, providing a full, bright, sharp view, even at high magnification. Our only complaint about the Swarovski scope in our last review was that it was not available in an ED (extra-low dispersion) or fluorite-glass version. The benefit of both ED and fluorite glass is that they help to bring the primary colors into focus together, thus reducing color fringing and improving the clarity of the image being viewed. They also greatly increase the price of a scope. But it's worth it if you want the best view possible. Swarovski has since come out with the ST-80 HD, which does have top-quality optical glass and is a fabulous instrument.

> *Many scope manufacturers jumped into the fray, attempting to create ever better optical instruments.*

Many other scope manufacturers soon jumped into the fray, attempting to create ever better optical instruments. Bausch & Lomb introduced their Elite 77mm scope, available with or without ED glass; Optolyth produced their TBG 80 HD scope; Fujinon came out with their Super ED 80 scope; Nikon came out with a bigger Fieldscope; Leica designed the APO Televid 77mm scope, as sleek and attractive as a zeppelin. Many of these scopes are fully waterproof, unlike the TSN-2 and the TSN-4. As each of these products hit the streets, you could almost hear the hiss of Kowa's birding market share leaking away. Finally, Kowa fought back with their new TSN-822 and TSN-824 (the fluorite version of the scope), each of them boasting an 82mm objective lens, full waterproofing, and a vastly improved 20x-60x zoom eyepiece.

So, was this the final shot in the scope wars? No way. Apparently Optolyth got tired of all the pussy-footing around of the other scope manufacturers, making objective lenses incrementally larger and larger—first 60mm, then 77mm, then 80mm, then 82mm. They recently unveiled a super scope with a 100mm objective lens. These paramilitary-looking behemoths will no doubt be talked about for years after their appearances in Third World villages—and, as to your chances of getting safely through military checkpoints along the Inter-American Highway, good luck—but they do provide an amazingly bright image in extremely low light.

It's really not surprising that the typical, top-of-the-line birding scope has evolved into its current style and shape—a fully waterproof, Porro-prism scope with an eyeglass-friendly, 20x-60x zoom lens and a large objective lens for increased light-gathering ability. They're so convenient. You haul them to the field bolted to your tripod, set them up in an instant, and start looking for birds. You don't have to fumble for different eyepieces to find the perfect one to use at a given moment. You don't even have to worry about your scope being ruined by rain—most of the best scopes are nitrogen purged and immersion tested. The only major birding scope I can think of that has refused to follow the pack is the venerable Questar, which is not waterproof, does not have a 20x-60x zoom eyepiece (instead, you can switch easily from 54x to 87x and back with a tiny knob), and it does not use a Porro-prism, refractor design. The Questar is a catadioptric scope and has a large concave mirror at the back that magnifies the image and bounces it back to a smaller mirror in front, which in turn bounces the image back to the eyepiece. As you'll see below, being a maverick like Questar is not always a bad thing.

The Q is Still King

For all you aficionados of fine optics who will pay any price for a clear, sharp image, take note: the Questar Birder spotting scope still soars high above the competition in terms of brightness and optical clarity (and price!). This scope is amazing. When it comes to looking

TIM GALLAGHER

out over a broad expanse of water to identify a distant scoter or peering through the heat shimmer to pick out the distinguishing features of a flycatcher that you can't even see with your naked eye, nothing comes close to a Questar. It's no surprise that so many birding tour leaders take one along to give their customers a really sharp, close-up view of the interesting birds they find. Though it doesn't have a 20x-60x zoom, the scope's two-power system works well and provides a better image at 87x than many scopes do at 60x. On the down side, Questars are somewhat clunky looking, the image you see in the eyepiece is reversed (that is, when you pan to the left, for example, the image moves to the right), and they are not waterproof. In addition, standing bent over a Questar for long periods can give you a backache.

The Close Runners-Up

The top manufacturers of spotting scopes have taken the state of this optical instrument to a new level, with advances in basic design and larger objective lenses for superior light-gathering ability and wider fields of view. The top dogs of our last review (after the Questar) were the Kowa TSN-4 and the Bausch & Lomb Elite 77mm with ED prime glass. Though these are still excellent scopes, they have been outdone with a capital "O" by the leaders of this review.

Although there was a lot of nice glass to look through, the Sapsuckers couldn't help hovering around a few models, drawn to them as they would be to some palearctic shorebird on a local mudflat. It was a form of natural selection, not to be influenced by the clipboard-toting, would-be data gatherer who wanted to give each scope equal time . . . arrrgh! At the head of the pack were the aforementioned Kowa TSN-824, Swarovski ST-80 HD, and Leica APO Televid 77mm, fantastic scopes the lot. It was really a toss-up here. People seemed to like whichever of the three they happened to be looking through at a given moment.

The Kowa provided a beautiful, sharp, vibrant image, perhaps slightly brighter than the Swarovski's, and its small focusing knob on the prism housing was more conveniently located. But the Swarovski had some staunch supporters in this camp, not surprisingly. The ST-80 HD had been the hands-down favorite of the Sapsuckers since its debut, and Swarovski is now the official sponsor of the team. But most of the reviewers preferred the small focusing knob of the Kowa to the large focusing collar around the Swarovski's barrel, though

One afternoon, the Sapsucker Scope Squad trucked all of the review scopes down the hill to Cayuga Lake for side-by-side comparisons. After several hours of gazing intently at any bird, boat, or buoy that came into view, the intrepid group had managed to separate the good, the bad, as well as the ugly scopes.

Scope Model	*Objective lens diameter*	*Eyepiece*	*Case*	*Armor*	*Waterproof*	*Weight in ounces (approx.)*	*Length*	*Sharpness*	*Brightness*	*Zoom rating*	*Eyeglass rating*	*Ease of focus*	*Suggested retail price*
Bausch & Lomb Elite with ED Glass	77mm	20x-60x	no	no	no	51.7	13.5"	8.5	8	7	6.25	9	$1,251
Bushnell Spacemaster	60mm	20x-45x	yes	yes	no	37.5	13"	6	6	5	6.5	8.5	$ 483*
Celestron C-90	90mm	8mm-24mm	yes	yes	no	80	12"	8.5	8	6	6	8	$ 900
Celestron Ultima 80	80mm	20x-60x	no	no	no	43.5	17"	3.5	6	5	6.5	7	$ 650
Fujinon Super ED 80	80mm	20x-60x	no	no	yes	55.3	18"	8.5	8.6	7	7	8	$1,650
Kowa TSN-824	82mm	20x-60x	no	no	yes	56.4	19"	9.9	9.7	9.8	9.8	9.75	$1,580
Kowa TSN-4	77mm	20x-60x	no	no	no	41.9	14.7"	8.9	8.5	8	8.5	9	$1,512
Leica APO Televid 77mm	77mm	20x-60x	no	no	yes	72	17.5"	9.9	9.5	9.7	9.8	9.75	$1,545
Nikon Fieldscope II ED	60mm	15x-45x	yes	no	no	39.1	11.4"	7.5	7.5	7	7	8	$1,193
Nikon 78mm ED Fieldscope	78mm	15x-45x	yes	no	no	51.3	14.5"	7.5	8	7	7	8	$2,038
Optolyth TBG 100 HD	100mm	20x-60x	no	yes	yes	94.5	15"	7.9	9.8	9	9	8.5	$1,949
Optolyth TBG 80 HD	80mm	20x-60x	no	yes	yes	46	15"	7.9	9	9	9	8.5	$1,199
Questar Birder	89mm	54x & 87x	yes	no	no	70.3	11.7"	10	10	na	10	8.5	$3,050
Swarovski ST-80 HD	80mm	20x-60x	no	no	yes	51.9	15.5"	9.9	9.6	9.9	9.9	9	$1,550
Swift Nighthawk 849	80mm	20x-60x	no	no	no	44.6	17.5"	6.4	7	7	7.5	8	$ 795
Televue Pronto	70mm	27mm & 32mm	yes	no	no	121.6	17.5"	8.8	9	na	7	8.5	$1,275
Televue Ranger	70mm	27mm & 32mm	yes	no	no	62.8	17.5"	8.8	9	na	7	6.5	$ 850
VERNONscope Brandon Master Birder	80mm	15x	yes	yes	no	72.1	15"	8.8	9	na	9.5	8.5	$ 999*

Each scope comparison category (sharpness, brightness, etc.) is rated on a scale from 1 to 10, the best being 10.

Please note: Suggested retail prices are only provided as a basis for comparison. Actual prices vary widely and are sometimes considerably lower.

*Price includes eyepiece.

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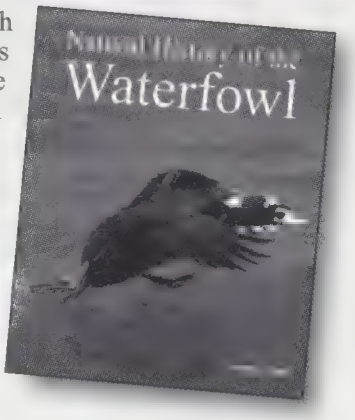
Natural History of the Waterfowl

by Frank S. Todd



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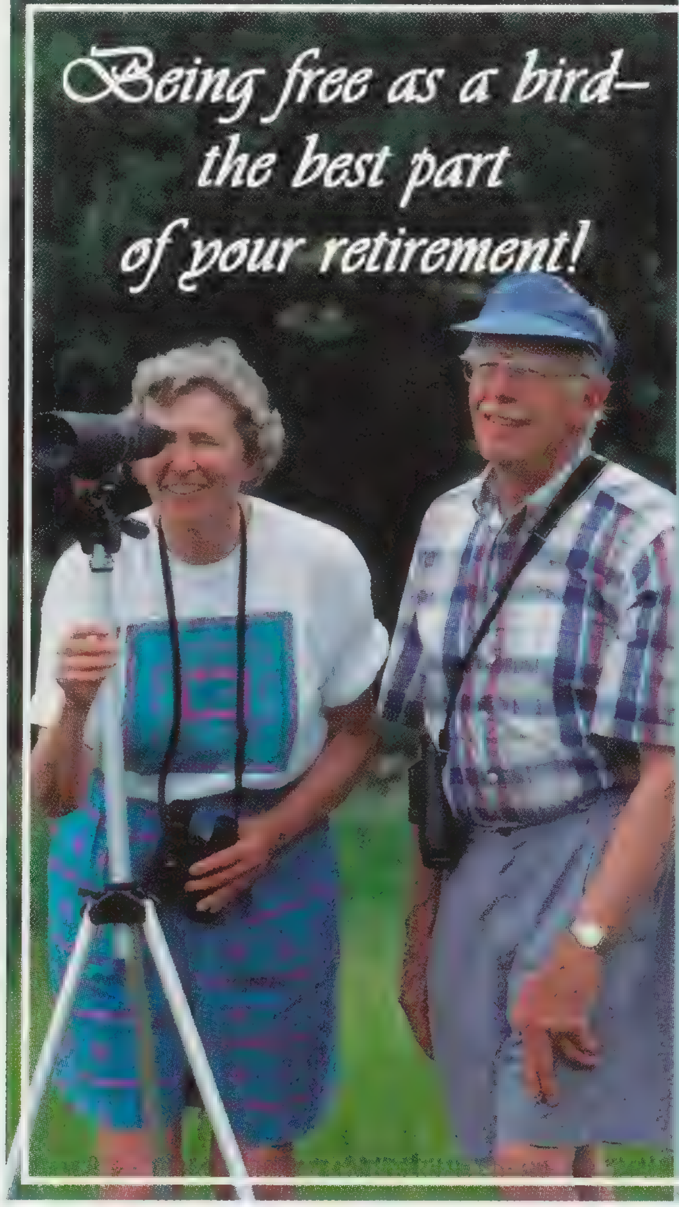

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this was a minor consideration. Leica's APO Televid 77mm scope was the sleekest-looking instrument, its metallic finish suggestive of something you might see aboard the space shuttle. It, too, is a great scope, with a fluorite lens, a pop-up eyecup like the ones on Leica binoculars, and an interesting focusing system—two adjoining wheels at the top of the prism housing, one for making coarse adjustments, the other for fine-tuning. I'd be more than glad to own any of these scopes.

The Optolyth TBG 100 HD scope, with its whopping 100mm objective lens, was the largest and heaviest of them all. This army-green, rubber-armored, waterproof monster pushes the envelope of spotting scope technology in terms of light-gathering ability as well as the extremes that a birder will go to in order to see distant or poorly lit birds. This scope is so heavy that some portion of your purchase price could probably be written off against the expense of joining a gym or buying weights. One day after work, three of the reviewers took this scope and the Swarovski to Montezuma National Wildlife Refuge, where they peered at shorebirds on a mudflat in drizzle until it was too dark to see anything. Interestingly, although the Optolyth scope was bright, the Swarovski seemed to provide a noticeably crisper image and capture more feather detail on the shorebirds. But later on, sometime between dusk and darkness when it was impossible to see birds with the Swarovski, the Optolyth came into its own and still provided an identifiable image of the dowitcher they were watching. So, apparently the Optolyth becomes an indispensable tool—for about 15 minutes each day.

A slight but noticeable step down, especially in their usefulness for eyeglass wearers, were the Bausch & Lomb Elite, the Fujinon Super ED 80 scope, and the Nikon 78mm ED Fieldscope.

The Bausch & Lomb Elite 77mm, a top contender in our 1994 scope review, has definitely lost some ground against the impressive array of newer scopes. The Elite has an attractive design, with a large objective lens in a slender package and a convenient focusing knob like the Kowa's. It's not quite as bright and sharp as the top three in this group, and the zoom eyepiece is definitely not very eyeglass-wearer friendly. The Fujinon Super ED 80 also didn't quite make the top echelon, but it is a good, serviceable scope that I'd be happy to find in my Christmas stocking. The new, supposedly bigger and better Nikon 78mm ED Fieldscope is a decent scope, but it was ranked lower in sharpness by our reviewers than the others in this better group.

The Also-Rans

An obvious step down from the top-of-the-line scopes in both price and quality were the Swift Nighthawk 849 and the Celestron Ultima 80. Except for some minor cosmetic differences, the body design of these two models—which were produced by different companies—appears to be identical. And yet, surprisingly, the Swift we looked through provided a dramatically better image than the Celestron Ultima 80. The Celestron showed severe color aberrations, including a bluish halo-like fringing around the bright white Tree Swallow box we focused on at the other side of Sapsucker Woods pond. This separation of colors was most noticeable at high magnification, rendering the upper end of the zoom ratio almost useless. In a comparison between the Bushnell Spacemaster and the Celestron Ultima 80 at approximately 40x magnification, the Spacemaster won, hands down. But the Swift Nighthawk 849, despite being the twin brother of the Celestron Ultima 80, beat both scopes easily in this comparison.

Other Worthy Contenders

At this point, we venture from the standard zoom-eyepiece field scopes to several less-traditional models, some with roots more firmly

TIM GALLAGHER

With its "institution green" color and its somewhat clunky appearance, the Televue Pronto is definitely not one of the most attractive scopes on the market, but it is a reasonably-priced, serviceable optical tool for birding.

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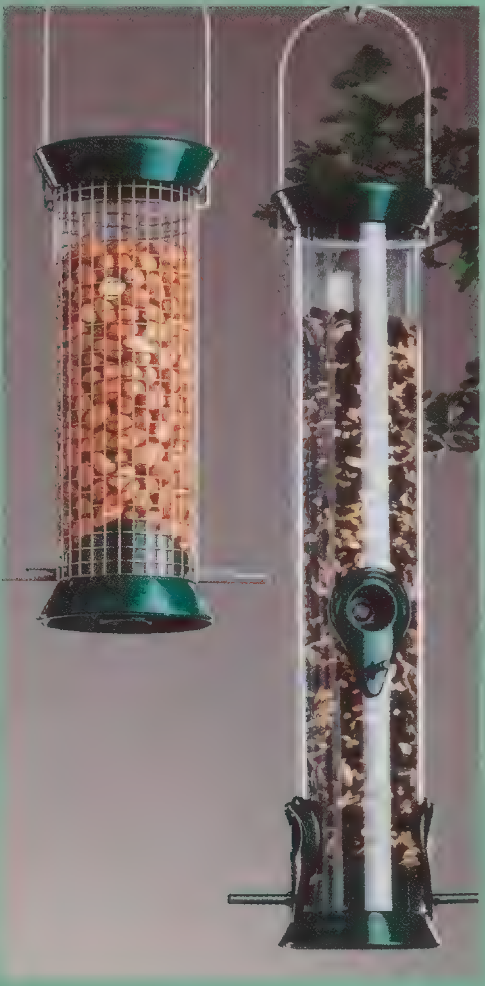

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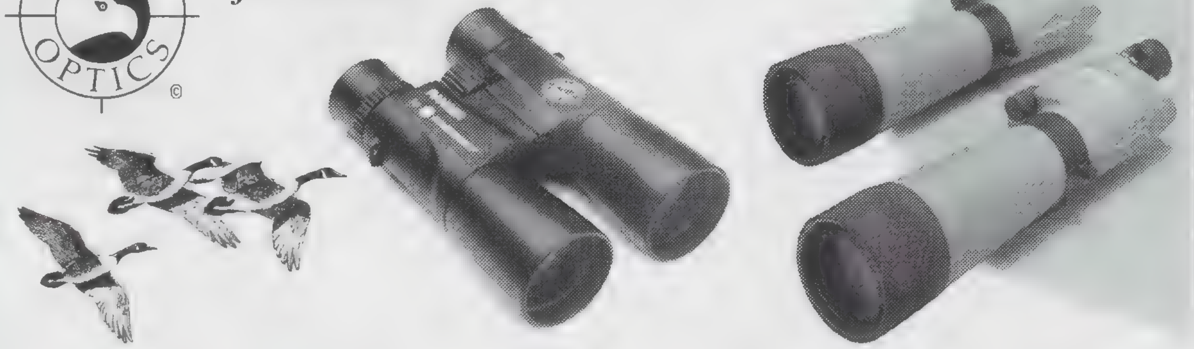

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set in star gazing than bird watching. Because there are probably 12 birders for every astronomy buff (it's hard to believe there are that many astronomers), it should be no wonder that the makers of astronomy telescopes are trying to tap into the lucrative market we represent. The Questar scope would have appeared in this section, but it was such a good scope that we gave it a section of its own. It should be noted that none of these scopes are waterproof.

More and more Televue Prontos and Televue Rangers have been showing up at birding hotspots in the last year or two. These scopes—with their "institution green" color and somewhat clunky appearance—are not the best-looking spotting scopes around, but they are good optical tools. They are particularly sharp using the fixed-focal-length eyepieces; the view through their zoom eyepiece did not appear as crisp. The Televue Pronto and the Televue Ranger both provided nice views in our field test using wide-angle 27mm and 32mm eyepieces. The Pronto has a smooth rack-and-pinion focusing mechanism and was fairly sharp with its 8-24mm zoom eyepiece, though not nearly as sharp as the Kowa TSN-824. The smaller Televue Ranger requires a cumbersome two-step focusing process—first you do the coarse focusing by sliding the rear barrel or focusing tube back and forth, and then you fine-tune the image using a focusing wheel.

VERNONscope, another long-time designer and builder of astronomy telescopes, has an interesting new product called the Brandon Master Birder, a rubber-armored, 80mm scope with an amazingly large eyepiece that is designed to be looked through with your eye an inch or more away from the eyepiece—a real blessing for eyeglass wearers. Everyone who looked through the scope's 15x eyepiece commented on the brightness and sharpness of the scope and also on the illusion of three-dimensionality with close objects. Unfortunately, it was difficult to compare this scope with the others because they were capable of so much greater magnification. A 15x scope is fine for backyard birding and other times when maximum power isn't needed (in fact, one of our reviewers commented that this would be a fantastic scope for any nature center or refuge visitors' center), but there are times when you need more power to bird effectively. We were supplied with a 2.4x barlow, which boosted the scope's power to 36x, but we'd still like to see how it does at the supreme test—looking at shorebirds on a mudflat at 60x on a dreary fall day. The manufacturers say that they are developing a powerful zoom eyepiece for the scope, and we're eager to take another look at this product.

The Celestron C-90 has been around seemingly forever. And it's a good scope—a little on the bulky to awkward side, maybe, with a big, stiff focusing ring the same diameter as the barrel, but it provides a sharp image at magnifications that few of the other models could even achieve. Like the Questar, the C-90 is a catadioptric scope, thus the short, wide barrel required to house the magnifying mirror. Though it's not in the same class as a Questar, it is a lot of scope for the price.

TIM GALLAGHER

The sleekest, most Space Age looking of the spotting scopes tested, the Leica APO Televid 77mm scope (above) ended up in a virtual dead heat with the Kowa TSN-824 and the Swarovski ST-80 HD for top honors in the Porro-prism refractor scope class. The overall winner in terms of brightness and optical quality was the Questar, a catadioptric (mirror) scope.

The susceptibility to moisture damage, the possible need to carry more than one eyepiece or combination of eyepieces and attachments, and the slow or awkward focusing mechanisms are the main drawbacks to using any of these astronomy crossover scopes as birding instruments. If you can live with their limitations, though, you can buy a decent scope for a lot less money.

Conclusion

The key to choosing the right scope is to determine which qualities your scope must have and how much you are willing to pay. Think about it carefully before you make your purchase. Talk to other birders. Look through as many different scopes as you can. And you'll be able to get a scope that you can live with for a long time. ■

Dave Ross is a sound engineer at the Lab's Library of Natural Sounds.

In the Field

CHAMP: IN MEMORIAM

by Jack Connor

The Passing of a Mockingbird

The last time I heard Champ the mockingbird sing was on a blue-sky morning in late September or early October 1996. He was up on his favorite perch, the telephone pole over the tennis courts, and as usual, he was tripping through his repertoire at high speed—flicker, robin, Killdeer, starling, blackbird, yellowthroat, jay, cardinal, chickadee, towhee, kingbird, crested fly, and assorted others that came too fast for my ears. He liked to leap straight up as he sang, fluttering four or five feet above the pole with wings flashing, then drop back down and spring up again, all without missing a note. And he liked to throw in sounds no other local mockers attempted: a *bob-white!* or two or a Forster's Tern's piercing *ke-yaaaar!*

The summer of '96 had been another good one for Champ. He had driven all of the other males out of his territory in the park, harassed the crows and dogs that ventured too close, and helped his mate fledge three young from their nest in the line of cedars along the river's edge.

He had nested in those trees for several summers running, although I don't know how often with the same mate. He seemed tough on his partners, luring them to him with his songs, then chasing them around the park for what seemed a month of prenuptial scolding, *chat-chat-chatting* at them whenever they tried to perch on a tree, shrub, or telephone line he didn't approve. After the eggs hatched, he also had the odd habit of harassing his partners while they tried to carry food to the nestlings. I could never tell whether he was warning them not to go near their nest while my dog and I were watching or was just unable to restrain his bullying instincts. His nests succeeded, in any case, fledging two or three young each summer.

His mates retreated from the park each fall, and Champ grew quiet from November through February. Most winters, I could find him trying to guard his cedar trees from the waxwings and yellowrumps who challenged him for the berries. When they ganged up on him and became too numerous to chase, he would retreat to his perch on the telephone pole, looking humbled, tail drooping, while the smaller birds feasted on his stock.

I never saw him last winter, however. He had lost some more important battle, apparently. March, then April rolled around, and though the early nesters were courting, the park had become a sad and duller place. The only *flick-flick-flickas* came from flickers; the only *chonk-ka-reeees* from

Red-winged Blackbirds. No *bob-whites* could be heard at all.

The park remained mocker-less for weeks, as if Champ's last strains of the fall had left some residual fear in the neighborhood. Then, finally, in mid-May, two new males arrived and subdivided his territory along the river, splitting it right at the cedar tree that had held Champ's last nest. New Guy East (NGE) inherited the telephone pole, but he rarely perches on it, and neither he nor New Guy West (NGW) can sing like Champ. Both of them repeat themselves more than Champ ever did: New Guy East includes the titmouse's *peter, peter, peter* in nearly every sequence; New Guy West seems equally hung up on the cardinal's *wheet-wheet-wheet.* Neither of them seems to have Champ's . . . what should I call it? Musical intensity? Depth of feeling? Improvisational ability?

Listening to those two pretenders inspired me to do some reading to measure Champ against the standards of his species and so try to reconstruct his claim to fame posthumously.

In their intriguing life history of the mockingbird in the new *Birds of North America* series, Kim Derrickson and Randall Breitwisch explain various ways that repertoires can be measured. Unfortunately, all of them require a good ear or a good tape recorder, neither of which I possess. If someone had asked me to estimate the number of songs Champ had mastered, for example, I would have said, "An amazing number! At least 25 different sounds, maybe even 50!" According to Derrickson and Breitwisch, 25-50 songs would have ranked Champ at the bottom of his class. Male mockingbird repertoires average between 90 and 160 songs, and at least two individuals have been recorded mimicking 200 different song types.

A song type might be a true song (the *fee-bee, fee-bay* of the Carolina Chickadee, for example), a call or warning note (the *tut-tut-tut* of the robin, for instance), or non-avian sounds such as the barking of a dog, a lifeguard's whistle, or the squeak of a wheelbarrow. All mockingbirds seem to draw on a wide variety of aural sources.

To appreciate an individual's repertoire you have to listen diligently and study him in a variety of situations. Derrickson recorded four males extensively over two years each and found that more than a quarter of their songs were sung only once in the entire period. You also have to listen year after year, because mockers add new songs and drop old ones throughout their lives. As many as half the songs in one spring will be different from those sung the previous spring. Finally, you may want to compare the sounds you heard from your favorite backyard mockingbird from April to June and from September to November to see what differences you can discover. Males apparently have two separate vocal repertoires, one for spring, another for fall, with as little as a one percent overlap of song types in common.

Females also sing, but primarily in fall and winter and apparently not as loudly or with as much complexity as the males. Female song has not been as carefully studied.

Repertoires can be measured in various ways. Researchers count the songs in "bouts," or repetitions of the same sound. One bout of the flicker song might be a sequence of five: *flicka-flicka-flicka-flicka-flicka.* Song versatility is the number of different types included in a set number of songs: five types (flicker, robin, jay, cardinal, blackbird) in 25 songs = .20 versatility. Transition versatility is the number of changes ("switches") within a set sequence (going from titmouse to cardinal to titmouse to cardinal again = three switches). Total versatility combines both measures.

"Males that sing with the greatest versatility and lowest bout length are the first to attract mates and begin nesting," Derrickson and Breitwisch explain. Yeah, that's it! I say. That's what made Champ what he was. With my nose in the air and a snooty tone in my voice, I can now point out that the New Guys may have transition versatility, but they lack song versatility, and so they lack that *sine qua non* we mockingbird critics insist upon: total versatility.

But both New Guys nested successfully, I have to admit. NGE succeeded first, fledging two young in June. NGW followed shortly after, with a nest only 100 yards away. Then one day I thought I heard NGE do the Forster's Tern *ke-yaaaar!* And a couple of days after that, NGW was chasing his mate around while she tried to carry a dragonfly to their nestlings.

Maybe there's some promise in this younger generation after all.

Anyone have a parabolic microphone for sale, cheap? ■

ILLUSTRATIONS BY JOHN SCHMITT

THE ERRORS WE'RE KNOWN BY

By Pete Dunne

Somewhere along the line, I became known as a great birder—the kind of birder who can look at an *Empidonax* flycatcher and describe it down to the submolecular level; someone who can study a stint and tell you which side of the nest it fledged from.

Although it's wonderful to be thought of so highly, it is also, in my case, not true. To paraphrase and apply a favorite old nursery rhyme to my abilities, when I am good, I am middle average, but when I am bad, I am horrid.

Horrid! Take, for example, the time I picked up a female diving duck on a lake in Minnesota. Had the lake been one of those lonely north woods lakes, everything would have been fine. Unfortunately, this was a very public lake, one that, at the time, was being visited by about 400 American Birding Association (ABA) conference goers.

The duck (which was, I feel compelled to point out in my own defense, pretty distant) looked like a scaup. My rule for distinguishing between Greater and Lesser scaup is a simple one. If the head suggests Ring-necked Duck, it's a Lesser. This bird's head did, indeed, suggest Ring-necked Duck, but there was a good reason for this—a reason that 400 members of the ABA very gleefully pointed out to me at the species tally.

It was a Ring-necked Duck.

Take, for example, the "Red-tailed Hawk" that I pointed out to the members of my Raptor Identification Workshop one September afternoon. "White underparts, bold patterning on the wings, reddish tail," I officiously explained as I marched ahead, letting the group hold back to apply this sage wisdom to the raptor circling less than 50 feet over their heads.

It was several years before one of the members of that group brought to my attention that the alleged Red-tailed Hawk was in reality a perfectly identifiable Osprey.

Funny. I'd never really noticed that bright sunlight diffusing through an Osprey's tail has a reddish cast.

I'm not the only birder who makes errors (and some of the ones I've seen would be worthy of even my own worst efforts). I recall one nature center director who was adamant that the bird in the scope was a Great Egret—right up until the bird lifted off the refuge boundary sign, miraculously transforming itself into an adult Herring Gull.

I recall one of North America's best known and best loved hawk watchers once ushering me to a spotting scope that was focused on a "Peregrine Falcon" sitting on a distant tree line.

"An adult," he pointed out. "You can see its white breast moving."

It took a while for me to work through the inconsistencies, such as why the bird wasn't better defined and why the bird only moved when the wind was blowing. And it took me a little longer still before I concluded that honesty was the best policy and pointed out that the adult peregrine seemed to me to be sunlight shining though wind-whipped leaves.

All of these misidentifications were, of course, verifiably corrected. Some misidentifications aren't. One of my all-time favorites involves a cluster blunder committed by a host of pelagic birders. It was a 60-degree day in February, and we were off the coast of New Hampshire. (I know that sounds impossible, but it's true.)

Right off the bow, a bird was spotted that offered the 80-odd trip members a better-than-average look at what I (and several friends) assessed to be a reasonably straightforward alcid species.

In something under 30 seconds, the bird was identified as a "Razorbill!". . ."Murre!". . ."Dovekie!" . . ."Puffin!" Bear in mind that only one of these identifications could be correct.

A runner sent down by the trip organizer advised that "[the Organizer] will accept nothing less than a puffin on that one."

"Oh, boy," said one trip goer. "I got four lifers out of that bird. Let's find some more."

Me? Well, I thought it was a perfectly identifiable Dovekie. But then, I'm not the world's best birder. And as I said, I've been wrong before. ■

ILLUSTRATION BY JEFF SIPPLE

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LIVING BIRD

SPRING 1998 VOLUME 17 NUMBER 2

GREETINGS FROM SAPSUCKER WOODS

Each year, in late spring and summer, a curious phenomenon takes place here in Ithaca. Local residents start calling the Lab of Ornithology to report seeing strange, unidentified birds that look similar to crows but have colored shoulder patches like giant Red-winged Blackbirds.

"I couldn't find anything close to it in my field guide," they often say. "Is it some kind of mutation?"

"No," I reply. "It's just one of Kevin's crows."

For the past decade, Cornell researcher Kevin McGowan has been studying this area's crows, banding them, putting colored tags on their wings, and following them through the year. The wing tags are what causes confusion. If people looked at them closely with binoculars they'd see that the small plastic tags on each bird's wings have a unique two-letter code on them, which identifies the individual crow. The color of the tag identifies the year the bird was born.

You may have heard of Kevin McGowan before. In addition to being associate curator of Cornell University's birds and mammals collection, he is one of this magazine's technical editors. A stickler for accuracy in everything we publish, he's the one who will pull out a drawer of specimens and compare actual bird skins to a photograph if there's any question about the validity of a bird identification. I appreciate the fine work Kevin does on *Living Bird* and also his friendship, and I'm pleased to present a feature article about his research on page 30 of this issue.

— *Tim Gallagher*
Editor-in-Chief

8 JOHN O' BIRDS *by Edward Kanze*
Once famous throughout the world, naturalist John Burroughs was largely forgotten after his death in 1921. But now a new generation of conservationists is discovering the power and eloquence of his words.

16 DOWN IN THE VALLEY *by Tim Gallagher*
Native Texan Steve Bentsen has made a career of photographing the amazing array of birds in the Lower Rio Grande Valley.

24 LOST AND FOUND *by Tim Gallagher*
This past November, three Americans rediscovered the Forest Owlet—an Indian mystery bird that hadn't been spotted since 1884.

30 THE SECRET LIVES OF CROWS *by Rachel J. Dickinson*
Cornell researcher Kevin McGowan looks at the behavior and breeding biology of the bird we all think we know.

36 BIRD BIOGRAPHIES FOR THE 21ST CENTURY
by John W. Fitzpatrick
Momentum builds as *The Birds of North America* reaches the halfway point, and the Laboratory of Ornithology becomes its co-producer.

Departments

4 LETTERS

5 BIRDNEWS

Columns

6 SPOTLIGHT *by David S. Wilcove*
Parakeets in the Mist

43 PICTURE PERFECT *by Tim Gallagher*
Rock Steady

46 THE CATBIRD SEAT *by Pete Dunne*
Stuff Enough?

Cover: An adult male Pyrrhuloxia perches on a granjeno bush in Starr County, Texas. This striking bird is a fairly common resident in the thorny brush, thickets, and ranchlands of the Texas border country. Nature photographer Steve Bentsen captured this close-up portrait during the Valley Land Fund photography competition, held every other year in the Lower Rio Grande Valley. To see more of Bentsen's work, turn to the article and portfolio on page 16.

Right: A Golden-fronted Woodpecker feeds on the fruit of a prickly pear cactus. These fruits, or tunas, are a favorite treat of many birds in South Texas. When they're ripe, woodpeckers, mockingbirds, and other birds often have purple-stained faces from feeding on them. Photograph by Steve Bentsen.

Back Cover: It must be spring. An adult male Baltimore Oriole sits amid a treeful of fresh blossoms. For several years, this species was lumped together with the Bullock's Oriole to form a single species: the Northern Oriole. But the Nomenclature Committee of the American Ornithologists' Union decided three years ago to split the species again, to the delight of Baltimore residents—especially their baseball team's fans. Photograph by Tom Vezo.

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Letters

TIM GALLAGHER

BIRDING AT THE EDGE

I just read Tim Gallagher's article, "Birding at the Edge of the Arctic" (Autumn 1997), and it brought back many fond memories. I too was in Churchill, Manitoba, this past June. The photographs with the article were fantastic. I just wish there were more of them, because I was equipped only with minimal camera equipment. When I first arrived on the train, I checked into the motel and literally ran to the nearby granary ponds. The Ross's Gull was the first bird I saw. It flew overhead and landed on a rock in the first pond. I had no camera but did enjoy watching the bird for more than 30 minutes before the ruckus of a four-wheeler frightened it away. I stayed in Churchill for a week and never saw the bird again. Thanks for the wonderful article. Hoping to be "at the edge" again next year.

Gary Knowlton
Belding, Michigan

I was one of three Nova Scotians who arranged our own trip to Churchill the second week of June 1997, so I was fascinated to read Tim Gallagher's very enjoyable article and to compare his experience with ours. It was a first trip for all of us, and we booked a hotel room and a rental car well in advance. The car was a bit of an old clunker, but it served us well. We spent five full days in Churchill and used Bonnie Chartier's excellent book (*A Birder's Guide to Churchill*) as a reference. We were pleased at the number of helpful birders, frequently "Brits" wandering around on bicycles, who happily shared information. We saw all the "special" birds and many more, including getting great looks at a Ross's Gull on one day only and the Three-toed Woodpeckers at Twin Lakes before the fire. Two of us are also photographers, and we found that our needs for both birding and photography were well met. And there were no mosquitoes or blackflies at the time we went. It was one of the best and most relaxing trips I have ever made. We did just fine without being on an organized tour, and I would recommend this slightly earlier period in the second week of June to visit this great place.

Richard Stern
Kentville, Nova Scotia

EGREGIOUS ERRORS

I've had my share of birding errors, surely more than Pete Dunne, but his article in the Winter 1998 issue of *Living Bird* ("The Errors We're Known By") reminded me of the most egregious misidentification that I've observed in some 25 years of birding. This occurred on a guided bird tour in the south of France. We were in the Camargue one day, searching the plains for the promised Great Bustard, when one of our leaders spotted the bird and quickly put his scope on it. The assistant leader and the rest of us took long and satisfying looks, when the last of our group (not an expert birder) looked through the scope and exclaimed, "It looks like a rooster!" And indeed it was. Our chastened and somewhat humiliated leaders renewed their search, but we never did find the bustard.

William Mulligan
Seattle, Washington

We welcome letters from readers. Write to The Editors, *Living Bird,* 159 Sapsucker Woods Road, Ithaca, New York 14850, or send e-mail to <livingbird@cornell.edu>.

Deadly Towers

The weather was harsh in western Kansas on the night of January 22, 1998, with heavy snows and dense fog making visibility poor. Massive flocks of Lapland Longspurs left their snow-covered fields in search of bare ground on which to roost. A huge, disoriented flock began circling a 420-foot-high communications tower, and between 5,000 and 10,000 of them died in collisions with the tower, its guy wires, and other nearby structures. In a two-day period, people salvaging the kill picked up approximately 150 pounds of dead longspurs, as well as several other species, and left many more behind. They also found dead longspurs in nearby wheat fields. Some were impaled by wheat stubble, which suggests they were so disoriented by the lights and fog that they didn't know which way was up and flew into the ground with full force.

What impact is the rapidly increasing number of 200-foot or higher communications towers across the continent having on bird mortality? An estimate in the late 1970s put the total number of tower kills across the continent at 1.2 million per year (Banks, R.C. 1979. Human related mortality of birds in the United States. USFWS Special Scientific Report—Wildlife, No. 215). But just since 1989, the number of such towers in the state of New York alone has doubled and many communities nationwide are now wrestling with the issue of where to place new towers to minimize their environmental impact. We have nearly four times the number of towers today in North America that we had in the 1970s, and evidence exists that somewhere between two and four million songbirds are killed incidentally every year.

Most studies of tower kills have looked at towers of 1,000 feet or more in height. The most famous such study was initiated by Herbert Stoddard at the Tall Timbers Research Station near Tallahassee, Florida. Over a 30-year period the annual kill averaged about 1,600 birds at the study tower, and bird carcasses were found nearly every day from August through November. In New York State, studies at tall towers have been conducted by Wilifred Howard (a 25-year study at an 850-foot tower in Elmira) and Arthur Clark (a 31-year study at a number of 1,000-foot towers in the Buffalo area). These studies, conducted only in the fall, found that on average the towers killed hundreds of birds per year with peak years in the thousands.

Though it is generally agreed that towers less than 500 feet high pose less threat to migrating birds than larger towers, the massive longspur kill that took place this year in Kansas shows that large kills sometimes occur at smaller towers. This is alarming because these shorter towers are rapidly proliferating, and it is difficult to assess their accrued impact.

Significant kills occur when specific cloudy and foggy weather conditions overlap with peak migration nights. The flashing lights (required on towers more than 200 feet in height for aviation safety) reflect off the moisture in the air and form a "room" of light, causing birds to switch to their diurnal (visual) mode of navigation. They end up circling the tower and colliding with guy wires, other structures in the vicinity, and other birds.

For bird flocks flying at night or in bad weather, a communications tower can be a deadly obstacle, especially when it's shrouded in fog like this one.

BILL EVANS

The location of the towers with respect to regional geography and migration patterns plays an important role in determining a particular tower's kill potential. Any guy-wired and lighted communications tower more than 200 feet in height can kill birds if conditions are right.

Even more alarming is the likelihood that within the next 10 years we will have 1,000 new tall towers in the 1,000-foot or taller range built across the continent to broadcast the new digital television medium. Yes, terrestrial TV is likely to compete with the satellites for a long time to come. Once companies have invested money in these towers, they will lease space on them for a variety of communication services. Tall towers are the most economical way to broadcast over a large region, and many of the existing tall towers are already loaded to the maximum with antennas. So, broadcast companies will be building many new tall towers.

Based on the evidence that exists today, these towers alone will probably kill another million songbirds annually. And many cellular communications companies have been building their own towers instead of sharing single towers with related companies. This means that we could end up with two to three times as many towers as we need to do the job and an unnecessarily high mortality rate on the already-threatened songbirds we appreciate in our gardens and woodlands. It is not farfetched to predict that tower kills could soon exceed five million songbirds a year across North America.

At present, the U.S. Fish and Wildlife Service's Office of Migratory Bird Management has no well-defined guidelines in place to minimize the impact of these towers on bird populations. Clearly this issue must be watched closely, and more studies need to be conducted to find ways to reduce the destructiveness of these towers to birds. *— Bill Evans*

PARAKEETS IN THE MIST

by David S. Wilcove

Searching for a will-o'-the-wisp in an Ecuadorian rainforest

Discovering a new species of bird does not qualify as a major scientific breakthrough. It won't lead to a publication in a top scientific journal, it won't get you tenure at a prestigious university, and it won't earn you any awards. But it requires tremendous knowledge, a taste for adventure, a love of wilderness, and more than a little luck. Ever since I was a little boy, I have dreamed of someday adding my name to the list of distinguished ornithologists who have scoured the far corners of the earth in search of undescribed birds. Alas, as a graduate student I chose to study birds within the well-trodden United States, instead of in places like Peru or New Guinea, and subsequent jobs have kept me inside an office building most of the time. I have long since reconciled myself to the fact that my name will never appear beside the Latin binomial for some antbird or flycatcher as its rightful discoverer.

But I have never abandoned the hope of someday rediscovering a bird—tracking down some long-lost species known only from a few musty specimens locked away in a museum cabinet, becoming the first person in decades to see it alive. In my dreams, I spot the long-lost bird after an arduous journey to some remote corner of the planet. I take copious notes as it perches atop a tree, secure a few blurry (but diagnostic) photographs, and publish my observations in an ornithological journal. Bird watchers around the world are green with envy as word of my discovery leaks out. Couldn't I hope to accomplish that much on a three-week vacation? Once I almost did.

The year was 1978. I was 19 years old and a college sophomore. Robert Ridgely was a graduate student at the same university. He had already published *A Guide to the Birds of Panama* and was well on his way to becoming a preeminent authority on South American birds. As the academic year was winding down, Bob graciously invited me to join him in Ecuador on a search for the White-necked Parakeet. Until that time, I had never heard of the White-necked Parakeet, much less contemplated going in search of one, but I accepted his offer with alacrity. It didn't take me long to learn just about all there was to know about the species at the time.

In October 1913, the legendary ornithologist Frank M. Chapman had collected three specimens of a strikingly patterned parakeet in the vicinity of Zamora, Ecuador. Compared to other members of its genus, this new parakeet differed in having a bright white chest and neck. Chapman bestowed upon it the scientific name *Pyrrhura albipectus.* Nearly 30 years would pass before the next sighting of White-necked Parakeets, when two more specimens were obtained in the Cordillera de Cutucú, an isolated mountain range east of the Andes. From that point on, there were no further reports of the species. Bob's plan was to return to Zamora, where Chapman had collected the original specimens.

ILLUSTRATION BY JOHN SCHMITT

On July 17, 1978, we arrived in Cuenca, Ecuador, where we were met by an energetic Peace Corps volunteer named Richard Huber. Richard managed to hustle a vehicle from the Ministry of Agriculture and Livestock for us to use in our search: a Volkswagen "Thing" with defective brakes, a cracked body frame, bald tires, a broken windshield, and no gas gauge or speedometer. Nonetheless, it was a free car, and who were we to look a gift horse in the mouth (even if a horse would have been a far safer mode of transport)? On July 21, Bob, Richard, and I piled into the Thing and sputtered toward Zamora. Somewhere along the way, we managed to crack a wheel shaft, nearly sending us over a cliff and causing us to lose half a day while the car was being repaired, but by the evening of the 22nd, we were in Zamora.

For the next four days, we explored a variety of habitats on the winding road between Zamora and Loja, in the vicinity of Zamora itself and along the Rio Nangaritza and the Rio Jamboe. As a first-time visitor to South America, I was overwhelmed by the diversity, abundance, and beauty of the birds. The antbirds, flycatchers, and ovenbirds fascinated me, but the tanagers captured my heart. I remember flocks and flocks of them: Paradise Tanagers, Golden Tanagers, Beryl-spangled Tanagers, Saffron-crowned Tanagers, Metallic-green Tanagers—more than 40 species in all. Each one seemed impossibly radiant. The sight of 10 species together, flitting through the dense foliage, was like looking through a kaleidoscope.

But try as we might, we could find no parakeets. With so many other birds around, we were hardly bored, but the absence of the parakeets gnawed at us. Here we were following in the footsteps of Chapman, seeing many of the same birds he saw, but unable to find *Pyrrhura albipectus.* Were we in the wrong place? Or was it the wrong time of the year? Was the species alive or extinct? Given how little was known about the White-necked Parakeet, anything seemed possible.

One morning, near the outskirts of Paquisha, we discovered a road under construction leading into an adjacent mountain range, the Cordillera del Condor. New roads produce schizophrenic emotions among ornithologists. For a short while, they can provide bird watchers with access to previously inaccessible areas, but they also attract settlers, and within a few years, most of the adjacent forest is cleared. In this case, we were treated to miles of magnificent forest and torrential amounts of rain. So much rain, in fact, that bird watching became all but impossible. In the early afternoon, Bob heard a bird song he didn't recognize and set off in search of the songster. Wet, muddy, and exhausted, I chose to lag behind. A distant chattering sound slowly penetrated my water-logged brain: parakeets! I rushed to the edge of a nearby clearing in time to see a flock of about a dozen heading my way. Hands trembling, I raised my binocular to my eyes, only to discover that the lenses were fogged. I began digging into my pockets in search of a handkerchief, a Kleenex, something, anything to clean the lenses. But I was much too slow. By the time my lenses were clean, the birds were long gone, and without a better view, I could not determine which species of parakeet I had seen. But a feeling in my gut told me I had just squandered the chance of a lifetime.

We left Ecuador without seeing any White-necked Parakeets. Less than two years later, however, Bob returned to Zamora and succeeded in finding them. In the ensuing years, southeastern Ecuador became a popular destination for bird watchers, and soon tour leaders were regularly showing White-necked Parakeets to their happy customers. The birds, it turned out, could be found in three localities: near Zamora, the Cordillera del Condor (where I had my nonencounter), and the Cordillera de Cutucú. Why Bob, Richard, and I missed them in 1978 we will never know.

I, of course, became jealous of everyone who subsequently saw the birds. Last January, nearly 20 years after my original visit, I managed to convince Mace Hack, an ecologist at Princeton University, to join me for a brief bird-watching trip to southeastern Ecuador. We flew to Loja, hired a driver, and headed for Zamora. The narrow, winding road had long since been replaced by a highway, and steep slopes along the Rio Zamora that had been cloaked in forest two decades ago were now a patchwork of forest and pasture. Those glorious tanagers were still around, although they seemed less numerous than they were 20 years ago, and the sleepy, little town of Zamora had blossomed into a much bigger city. On the bright side, the Ecuadorian government had created a magnificent preserve, Podocarpus National Park, in order to protect much of the remaining forest, including some of the habitat of the White-necked Parakeet.

On the morning of January 9, we were watching birds along an old, gravel road near Zamora when my eye caught some movement in a nearby tree. A closer look revealed an adult White-necked Parakeet, calmly nibbling on a flower blossom. Nearby were nine others, all quietly perched in the tree, not more than 30 feet from where we stood. I was delighted to see them, of course. I was also relieved; in fact, I felt as though I had settled an old score.

But in bird watching, at least, no sooner is one score settled than a new one arises. Hidden within the small stack of mail that greeted me upon my return home was a Christmas card from Bob Ridgely and his wife, Peg. Inside was a photograph of a new species of antpitta that Bob had discovered two months earlier near Podocarpus National Park, not far from Loja. I've got to go back. ■

JOHN O' BIRDS

BY EDWARD KANZE

Once famous throughout the world, naturalist John Burroughs was largely forgotten after his death in 1921. But now a new generation of conservationists is discovering the power and eloquence of his words.

It is difficult to imagine the kind of fame that essayist and naturalist John Burroughs enjoyed in the late 19th and early 20th centuries. Close friend to the greatest men and women of his time, admired by presidents, beloved by the world, this amazing man—the child of an Upstate New York farmer—was largely responsible for planting the seed of the conservation ethic into the public consciousness. And yet, since his death in 1921, his writings have fallen into obscurity. As we near the end of this century and the end of the millennium, it is fitting that his writing is being reconsidered and embraced by a new generation of naturalists and conservationists.

Author Ed Kanze visited the Lab of Ornithology to present a Monday-night seminar on Burroughs this past fall. He had published a book, *The World of John Burroughs* (New York: Harry N. Abrams, Inc.), in 1993, and is a prominent booster of the naturalist's work. But he had no need to promote Burroughs on this night—the Fuertes room was packed with people, all eager to hear more about the life and times of this fascinating man. And Kanze did not disappoint. His talk was full of anecdotes and amusing stories that captured the personality of Burroughs and his many famous friends, such as Walt Whitman, John Muir, and Theodore Roosevelt.

I knew at once that I wanted to publish an article on John Burroughs, written by Ed Kanze, in *Living Bird.* But how, in a 2,500-word article, can you present the life of a man like Burroughs, who lived for nearly 84 years during some of the most eventful and momentous times in this nation's history, who wrote more than two dozen published books and countless essays, and who knew personally many of the literary and political figures of his day and had a deep influence on their work and their beliefs? A straight biographical article of that length would only be a boring recitation of dates and places. We decided instead to pull key excerpts from Kanze's book—insightful vignettes of Burroughs and his world—starting after Burroughs leaves his position as a schoolteacher in New York and goes to Washington, D.C., to seek his fortune, and following him to the end of his life. If this article hooks you, I encourage you to read Ed Kanze's book as well as the many works by Burroughs we have listed here. — *Tim Gallagher*

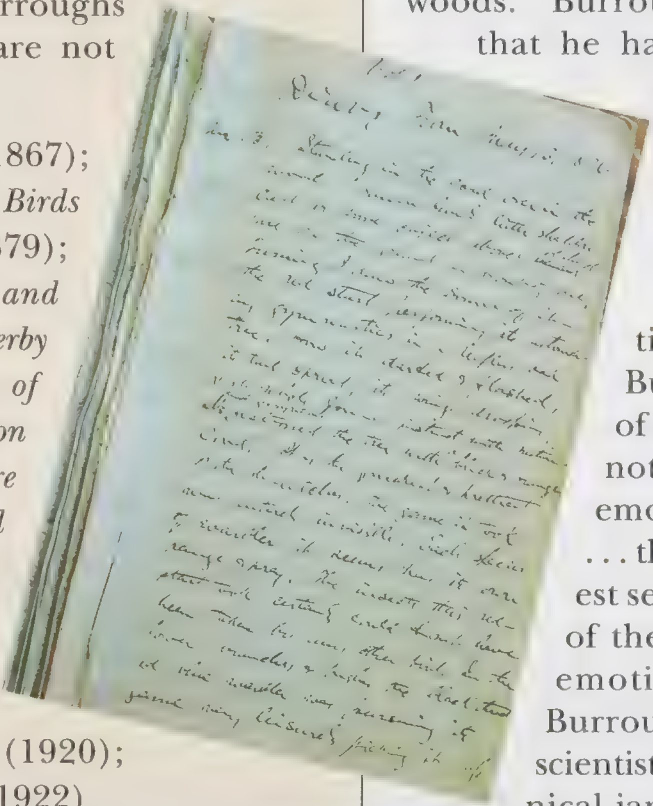
Nicknamed "John O' Birds" (John Muir was called "John O' Mountains"), Burroughs was a prolific author for his entire life, writing 27 books and numerous articles, as well as keeping a daily journal. Above, the final picture of Burroughs, taken just days before his death in 1921. At left, Burroughs and a canine companion watch a hawk soaring over his vineyard at Riverby.

LEFT: CLIFTON JOHNSON/COURTESY THE JONES LIBRARY, INC., AMHERST, MA.
RIGHT: COURTESY LIBRARY OF CONGRESS PHOTOGRAPHIC COLLECTIONS.

THE PUBLISHED BOOKS OF JOHN BURROUGHS

What follows is a complete listing of the published books of John Burroughs. Individual articles by Burroughs and anthologies put together by others are not included.

Notes on Walt Whitman as Poet and Person (1867); *Wake-Robin* (1871); *Winter Sunshine* (1875); *Birds and Poets* (1877); *Locusts and Wild Honey* (1879); *Pepacton* (1881); *Fresh Fields* (1884); *Signs and Seasons* (1886); *Indoor Studies* (1889); *Riverby* (1894); *Whitman: A Study* (1896); *The Light of Day* (1900); *Literary Values* (1902); *Life of Audubon* (1902); *Far and Near* (1904); *Ways of Nature* (1905); *Bird and Bough* (1906); *Camping and Tramping with Roosevelt* (1907); *Leaf and Tendril* (1908); *Time and Change* (1912); *The Summit of the Years* (1913); *The Breath of Life* (1915); *Under the Apple Trees* (1916); *Field and Study* (1919); *Accepting the Universe* (1920); *Under the Maples* (1921); *The Last Harvest* (1922)



Burroughs began keeping a journal in 1876 and, for more than 40 years, recorded his natural observations and thoughts. Above, his first journal entry describes an American Redstart he watched catching insects.

On Sundays, and during other scattered hours of leisure, Burroughs tramped with friends in Rock Creek Park and other nearby woods, sat discussing life and literature on the Capitol steps with Walt Whitman (while Chloe, Burroughs's Devonshire cow, grazed nearby on the Capitol commons), and tended garden. One day, driven by curiosity, Burroughs walked several miles to the battlefront to get a firsthand look at the Civil War. He returned shaken. The blood and the corpses appalled him, and bullets had whistled uncomfortably close to his head.

From a window in the Treasury Department, where he worked, Burroughs occasionally glimpsed Abraham Lincoln, who was fond of taking shortcuts on foot down back streets and alleyways. Though Burroughs admired Lincoln, he was not among those gathered at the Capitol when the President took his second oath of office on March 4, 1865. Burroughs's notebook records: "Today . . . made my first excursion to the woods. Everett and I thought it more desirable to see Spring inaugurated than Pres. Lincoln, as significant and gratifying an event as the latter is. The afternoon was deliciously clear and warm—real vernal sunshine, though the wind roared like a lion over the woods." Burroughs returned home pleased that he had found the wildflowers hepatica and bloodroot emerging from the ground, and that he had heard a bluebird singing "like the first tremulous voice of spring."

In an *Atlantic Monthly* essay titled "With the Birds" (1865), Burroughs wrote of the "wooing" of songbirds, the "long, tender note of the meadowlark," and "the emotions excited by the songs of . . . thrushes" arising "from our deepest sense of the beauty and harmony of the world." The writing is full of emotion, much like Whitman's. Burroughs described the birds with a scientist's accuracy, but he avoided technical jargon and told readers how the birds made him feel.

Through the late 1860s, Burroughs's friendship with Whitman flourished, and when the poet needed help with botany or zoology, he often turned to Burroughs for advice. The most striking example of a contribution by Burroughs to a Whitman poem can be found in "When Lilacs Last in the Dooryard Bloom'd." A Hermit Thrush sings repeatedly through "Lilacs," its plaintive notes helping to underscore the poem's melancholic atmosphere. Burroughs suggested the bird and its song to the poet after Whitman had asked his advice. The Hermit Thrush nests on mountains and in northern forests. Burroughs knew the bird from his Catskill boyhood; Whitman, a native Long Islander, did not.

Describing the song of the Hermit Thrush in his book, *Wake-Robin*, Burroughs wrote: "This song appeals to the sentiment of the beautiful in me, and suggests a serene religious beatitude as no other sound in nature does. It is perhaps more of an evening song than a morning hymn, though I hear it at all hours of the day. It is very simple, and I can hardly tell the secret of its charm. 'O spheral, spheral!' he seems to say: 'O holy, holy! O clear away, clear away! O clear up, clear up!' interspersed with the finest trills and the most delicate preludes. It is not a proud gorgeous strain, like the tanager's or the grosbeak's; suggests no passion or emotion,—nothing personal,—but seems to be the voice of that calm, sweet solemnity

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one attains to in his best moments. It realizes a peace and a deep, solemn joy that only the finest souls may know. A few nights ago I ascended a mountain to see the world by moonlight, and when near the summit the hermit commenced his evening hymn a few rods from me. Listening to this strain on the lone mountain, with the full moon just rounded from the horizon, the pomp of your cities and the pride of your civilization seemed trivial and cheap."

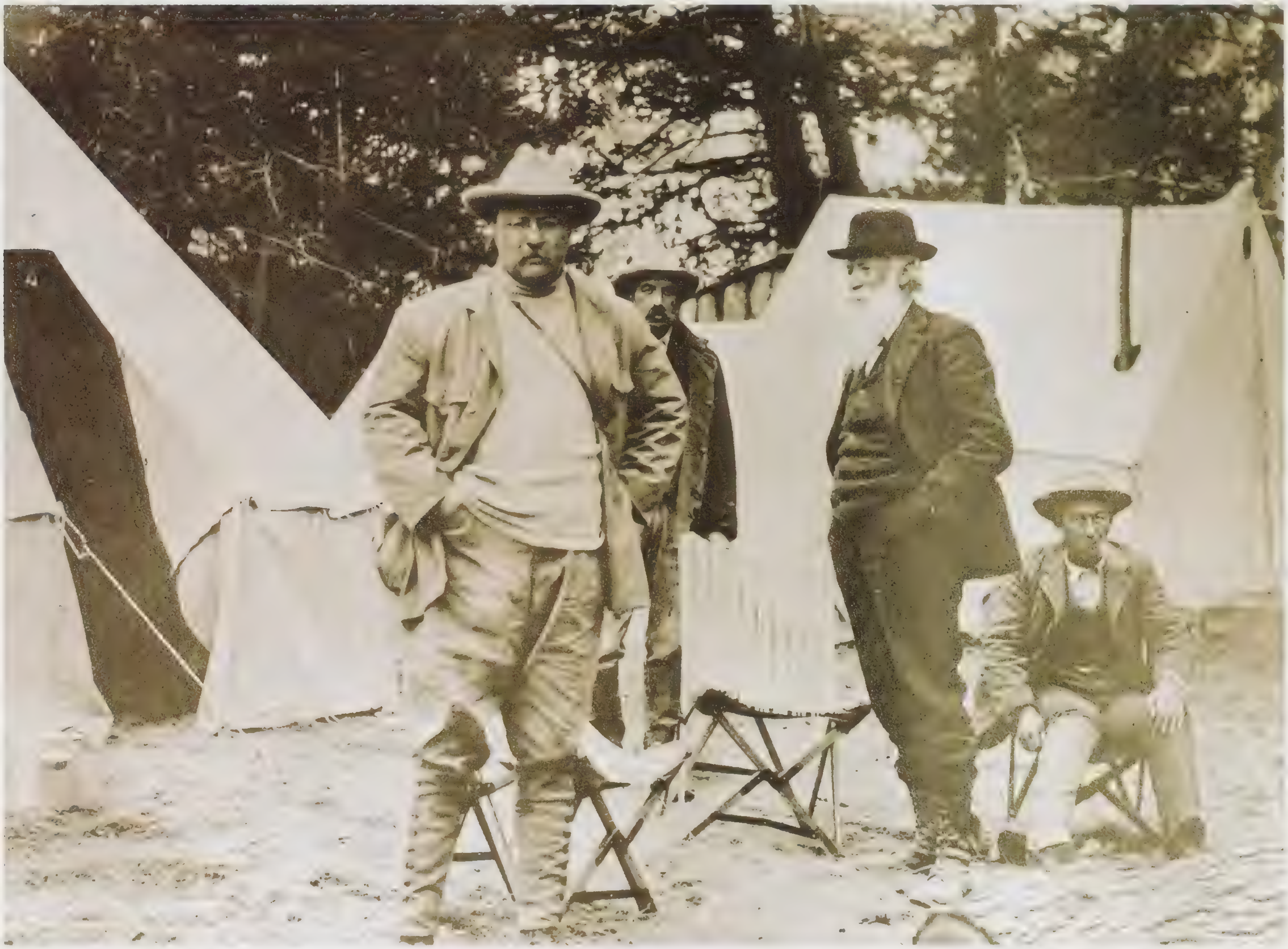
Burroughs's books, although they sold well, were not making him wealthy. But the books attracted admirers, many of whom became Burroughs's friends. One of those who made the transition from admirer to friend was Theodore Roosevelt. Burroughs and Roosevelt first met in 1889. The future president, then 30 years old, had read Burroughs's essays while traveling in England, and he told Burroughs that his descriptions of American scenes and wildlife had made him homesick. Despite vast differences in upbringing, Burroughs and Roosevelt had much in common. Both were successful authors and accomplished naturalists, and both were committed humanists who believed that man, despite his transgressions against nature, was a positive force on the planet.

Several years later, in 1903, Burroughs joined then President Theodore Roosevelt on a camping trip to Yellowstone National Park. The two men enjoyed each other's company immensely. The president, himself an expert bird watcher, was much impressed by his companion's ornithological abilities. In his book, *Outdoor Pastimes of an American Hunter,* Roosevelt recalled: "No bird escaped John Burroughs's eye; no bird note escaped his ear."

Another new friend of Burroughs's middle years was the Scottish-born, Wisconsin-educated naturalist John Muir. Muir and Burroughs first met in New York City in 1893. A year younger than Burroughs, Muir was an author of magazine articles but had yet to publish his first book. He lived in California and was fast gaining fame as a proponent of creating national parks and conserving American forests.

The friendship that developed between Burroughs, an easterner, and Muir, a confirmed man of the West, would eventually help to link conservation advocates east and west of the

In Washington, Burroughs became close friends with Walt Whitman (far left, below) and eventually wrote two studies on the famed poet's work. Later, Burroughs accompanied Theodore Roosevelt on a 1903 camping trip to Yellowstone National Park. The President, himself an expert bird watcher, was greatly impressed with his friend's ornithological skills. "No bird escaped John Burroughs's eye; no bird note escaped his ear," he later wrote.



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Burroughs strolls past the celery patch next to his cabin, Slabsides. He always enjoyed the hard work involved in clearing land, preparing the soil, and then cultivating and harvesting his crops. The outdoor physical labor was no doubt a welcome change from the sedentary work of writing.

Mississippi into a single powerful entity, a lobbying group with sufficient strength to battle the forces that actively opposed wilderness preservation—the timber, mining, and railroad interests.

Among the first visitors to Slabsides [a cabin Burroughs had recently built in the woods] were Frank Chapman, an ornithologist and bird-protection advocate from the American Museum of Natural History; William Brewster, a prominent Massachusetts ornithologist; and John Muir. Despite Muir's willingness to sleep outdoors, Burroughs led the way through the dark forest to Slabsides. There, they sat by the fireplace and talked late into the night. In his journal, Burroughs described Muir as a "poet and a seer" with "something ancient & far away in the look of his eyes."

As Burroughs grew older, he became more of an optimist. While other nature writers were beginning to hint, or state directly, that man was a sort of planetary disease, Burroughs grew more strident in suggesting that Homo sapiens was "a . . . supreme observer and appreciator without whom the world would lack meaning. . . . [Man] needs to enjoy the world if he is to care about saving it, to love himself if he is to remain a viable species through the ages." As Burroughs saw it, bird watching, identifying flowers, climbing mountains, living simply, and working hard in the open air were all means to this end.

For the most part, Burroughs enjoyed his celebrity. Although he was shy and socially uncomfortable, in the core of his being he also craved and reveled in human companionship. Whenever a crowd of Vassar girls appeared at Slabsides, asking him to lead them on a bird walk, he rarely turned them away. And with considerable pride, he accepted three honorary doctoral degrees: from Yale University in 1910, Colgate University in 1911, and the University of Georgia in 1915.

Of all the attentions bestowed upon Burroughs, probably none gave him deeper satisfaction than the adulation of children. To the young people of America, the naturalist was a hero—a sort of flesh-and-blood Santa Claus who shared their youthful fascination with every living thing that walked, crawled, flapped, slithered, or grew.

Wherever he traveled, children sought him out. In New Hampshire, he paused during an automobile journey to visit a sleep-away camp, where a crowd of boys and girls persuaded him to lead them on a nature walk. In 1984, after I had given a lecture on Burroughs, a girl who had joined in that ramble—now a woman in her seventies—spoke to me about Burroughs, whom she remembered as warm and soft-spoken. Her most vivid memory of him was lifting a honeybee from a flower with his gnarled fingers, showing the bee to the children, then letting the insect fly away unharmed. She remembered thinking that he must be the most gentle man in the world.

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During the last decade of his life, Burroughs added two household names to his lengthy roster of illustrious friends: Thomas Edison and Henry Ford. They wrote him appreciative letters and motored to the Catskills to look him up at "Woodchuck Lodge," a house Burroughs had refitted for summer use on the old family farm. Beginning in 1913, the three men began to spend occasional holidays together.

John Muir made a surprise appearance at John Burroughs's 75th birthday celebration (far right above). Though sometimes portrayed as bitter rivals, the two men actually had deep respect for each other's work. At right, Burroughs and a young friend examine a wildflower together.

RIGHT: NEG. #2A 2430/COURTESY DEPT. OF LIBRARY SERVICES, AMERICAN MUSEUM OF NATURAL HISTORY

Burroughs found much pleasure in the company of these men. He wrote in his journal: "Edison and Ford good playfellows. Edison sleeps ten or twelve hours in the twenty-four; says he can store up enough sleep to last him for two years. A great mind—a great philosopher—loves jokes and good stories. Mr. Ford, a lovable man, a great machinist, but not the philosopher Edison is; shy, modest man . . . he is not puffed up; thinketh no evil, has a good will for all. A real nature and bird lover."

Edison and Ford, on the other hand, saw Burroughs as a sage and treated him like a

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Among Burroughs's most devoted fans were Thomas Edison (at left, above) and Henry Ford (at right). In 1914, the two of them invited Burroughs to join them on a holiday in Florida. Burroughs was a far better naturalist than a driver. Having spent most of his years piloting vehicles pulled by horses, he found automobiles difficult to get used to. "The blind desperate thing still scares me," wrote Burroughs. "How ready it is to take to the ditch, or a tree, or the fence!" At right he poses in his Model T—a gift from Henry Ford.

hero. At mealtimes, they placed Burroughs at the head of their table, and they rejoiced when he beat them in wood-chopping contests (which he did routinely, even at the age of 83). "No man," Ford wrote in his autobiography, "could help being the better for knowing John Burroughs."

For Burroughs, friendship with Henry Ford brought hazards as well as pleasures. In early 1913, aiming to prove to Burroughs that the advent of the automobile was a good thing, Ford presented the naturalist with a complimentary Model T. On May 13 of that year, Burroughs wrote in his journal: "Have just taken a run of a few miles in the car. The blind, desperate thing still scares me. How ready it is to take to the ditch, or a tree, or the fence!"

John Burroughs outlived many of his friends. John Muir, a year younger than Burroughs, died in December, 1915, his health having failed during a long, fruitless battle to preserve Yosemite's Hetch-Hetchy Valley. Burroughs learned of Muir's death on Christmas Day. His journal records: "An event I have been expecting and dreading for more than a year . . . unique character—greater as a talker than as a writer—he loved personal combat and shone in it. He hated writing and composed with difficulty, though his books have charm of style; but his talk came easily and showed him at his best. I shall greatly miss him."

Three years later, Theodore Roosevelt, too, was dead; and while Burroughs had expected Muir's death, Roosevelt's came as a shock. Burroughs and the former president had been at political odds for years—Burroughs was a supporter of Woodrow Wilson, while Roosevelt ardently was not—but their friendship had never suffered. Suddenly Roosevelt, who had always been so full of life, was dead. Burroughs wrote in his journal: "Heard of Roosevelt's death last night and have had a lump in my throat ever since. I love him more than I thought I did . . . and I remember his great kindness to me personally . . . I can hardly speak his name without tears in my voice."

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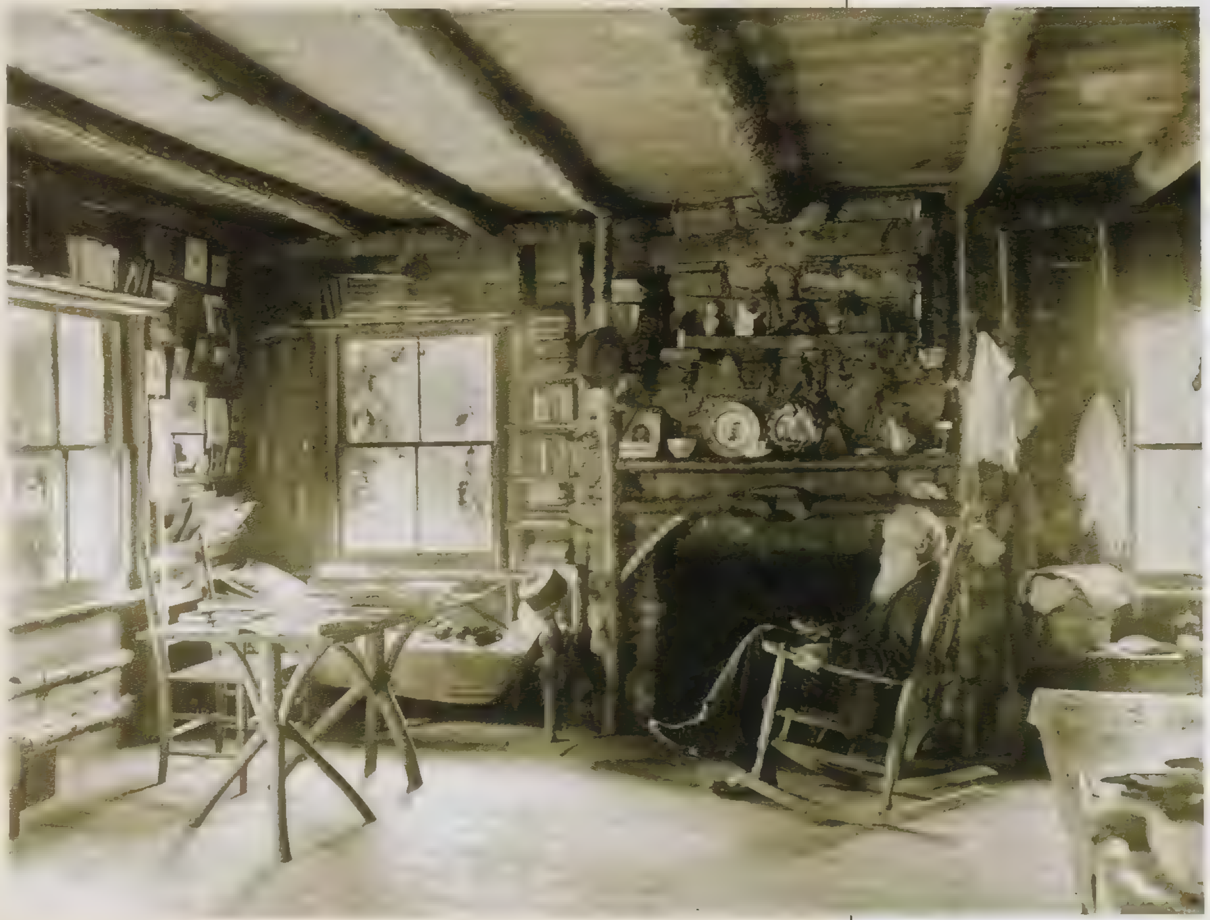
VISITING JOHN BURROUGHS'S RETREAT

Burroughs's cabin Slabsides forms the centerpiece of the John Burroughs Sanctuary, managed by the John Burroughs Association (JBA). Visits to the interior of Slabsides are restricted to Open House days twice a year, one in May, the other in October. The porch and surroundings may be visited at any time. For information about Open House days and other JBA programs, write the John Burroughs Association, The American Museum of Natural History, 15 West 77th Street, New York, NY 10024.

To reach Slabsides, which is located near West Park, New York, follow Route 9W north from Highland until you reach the West Park post office on the left. Turn left here on Floyd Ackert Road and follow it until you reach an intersection with Burroughs Drive. Turn left here. The narrow road climbs steeply and leads to a pull-off where a gate marks the Slabsides trailhead. Park (do not block the gate) and follow the trail for a gentle five-minute walk to the cabin.

Readers interested in making a pilgrimage to the grave of John Burroughs will find it at Burroughs Memorial Field, a New York State historic site, near Roxbury in Delaware County. From Roxbury village, drive north about two miles on Route 30 until Burroughs Memorial Road appears on the left. Turn here and follow the signs for about three miles to Memorial Field on the right.



In 1895, hoping to gain more solitude, Burroughs purchased 20 acres of land deep in the woods, about a mile west of his home at Riverby. There, at the base of a steep cliff, beside a swamp thick with red maple, poison sumac, and sassafras, he built a cabin with his own hands. A neighbor suggested that he call it "Slabsides." Burroughs liked the rustic sound of the name, and it stuck. Burroughs spent countless hours before the fireplace at Slabsides (above), staring into the embers. His writings took an increasingly philosophical tone.

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On March 29, 1921, after a winter in California, Burroughs died in Ohio on a train heading home to New York. Obituaries and remembrances appeared in newspapers, and Edison and Ford, bound for their friend's funeral in the Catskills, made public statements of grief. In California, the state assembly passed a motion honoring Burroughs, and in New York, the state legislature adjourned in his memory. No one could have foretold that his passing, just shy of his 84th birthday, would launch a slide from celebrity to obscurity. The Catskills remained a quiet, sleepy place through most of the twentieth century, and Burroughs's works settled into a Rip-Van-Winkle-like slumber.

Today, long forgotten except by students of Catskill lore and scholars of nature writing, Burroughs is being rediscovered by a new generation of readers. His renaissance seems a good thing. The author of *Wake-Robin,* a pioneer among nature-writers, deserves to be read and remembered. His contributions to conservation and the study of animal behavior were many, and even more important, perhaps, was the indirect influence he exerted by popularizing nature study. The nature study movement is now a juggernaut. Among the men and women who helped to get it rolling, Henry Thoreau, John Muir, Rachel Carson, and a few other proponents of conservation and the simple life stand out. But the single greatest push may have come from the writings of John Burroughs. As Paul Brooks observed in *Speaking for Nature,* Burroughs made more converts to nature appreciation in the nineteenth and early twentieth centuries than anyone else, and "they and their successors have been fighting our conservation battles ever since."

Brooks is right. John Burroughs's books, which were often best sellers, sent readers to the woods, fields, and seashores in droves. "You must have the bird in your heart before you can see it in the bush," he told his readers. No writer past or present accomplished more than he in putting it there. ■

Ed Kanze has been a professional naturalist, photographer, and nature writer for nearly two decades. Born and raised in the same southern New York landscape as John Burroughs, Kanze now lives in Cortland, New York, not far from the Cornell Laboratory of Ornithology.

DOWN IN THE VALLEY

BY TIM GALLAGHER
PHOTOGRAPHS BY STEVE BENTSEN

Native Texan Steve Bentsen has made a career of photographing the amazing array of birds in the Lower Rio Grande Valley

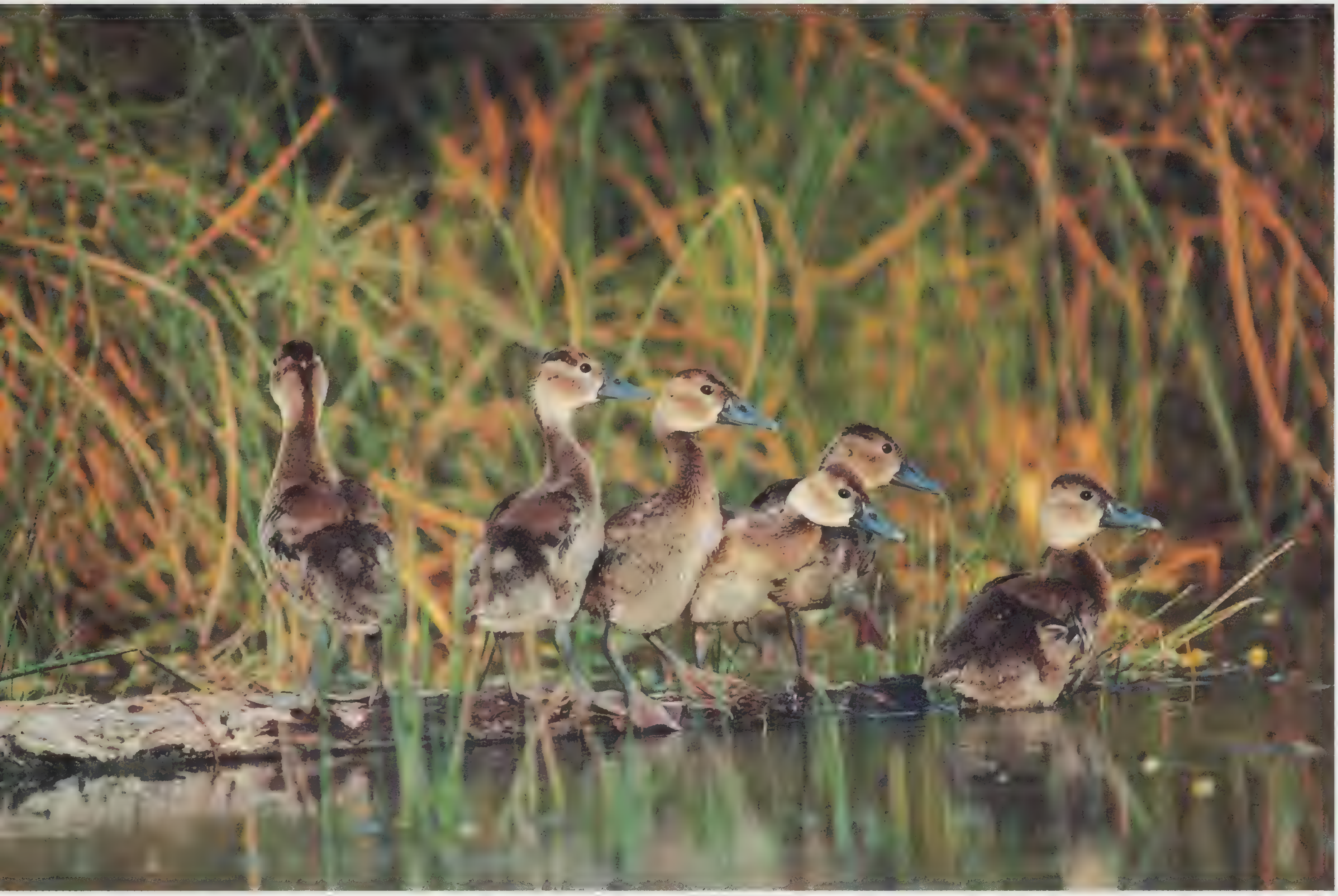
The Lower Rio Grande Valley of Texas is an amazing place to go birding—one of the best areas in all of North America. There the mighty Rio Grande flows the last few hundred miles to its end near South Padre Island, where its waters rush into the Gulf of Mexico. The valley stands at the confluence of several different physiographic regions, where the coastal, semitropical, and semiarid terrains meet. In the course of going just a couple of hundred miles upriver, you pass from beaches, bays, and coastal plains through prairies, brush, riparian forest, and palm forest, before reaching the arid, rolling hills of the Falcon Dam area. Several species of birds—such as the Green Jay, the Altamira Oriole, and the Plain Chachalaca—reach the northern limits of their ranges in the valley and are found nowhere else in the United States. And the eastern and central flyways also meet here, bringing a plethora of raptors, songbirds, waterfowl, and shorebirds each spring and fall.

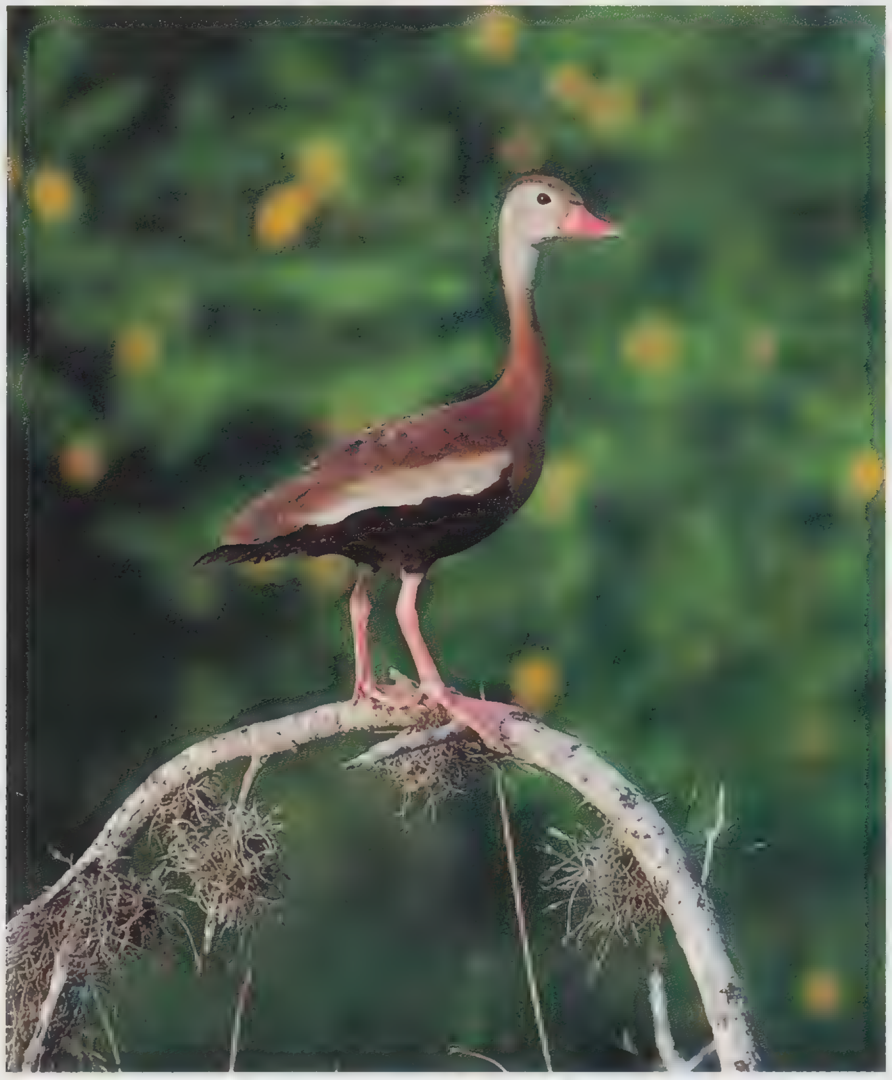
The valley is definitely a birder's dream—and it's also a great place for bird photography. One of the top bird photographers covering this unique area is Steve Bentsen, a native son who was born and still resides in McAllen, Texas, in the heart of the Lower Rio Grande Valley. It's difficult to visit an area nature center or look at a valley brochure without seeing a selection of his stunning images of Texas birds.

"Except for a brief time when I was in college and immediately after, I've always lived in the valley," says Bentsen. And his roots run deep there. His great-grandfather—who emigrated from Denmark and came to Texas after first settling in South Dakota—was one of the founding fathers of the area. In fact, the nearby Bentsen-Rio Grande State Park was a gift to the state from the family and was named for them. And Lloyd Bentsen, Jr., the former senator, vice-presidential candidate, and Secretary of the Treasury, is his second cousin.

Bentsen likes to tell the story of how, when his great-grandparents first immigrated to America, they were desperate to find winter shelter on the land they were home-

The Altamira Oriole (at left) and the Green Kingfisher (above) are quintessential Lower Rio Grande Valley specialties, rarely found anywhere else in the United States. Here an adult oriole brings an insect to its nest. Bentsen set up scaffolding near the nest and photographed the pair's progress through the nesting season. The smallest kingfisher in North America, the Green Kingfisher measures less than nine inches in length. Bentsen set up a blind next to a branch these birds frequented.

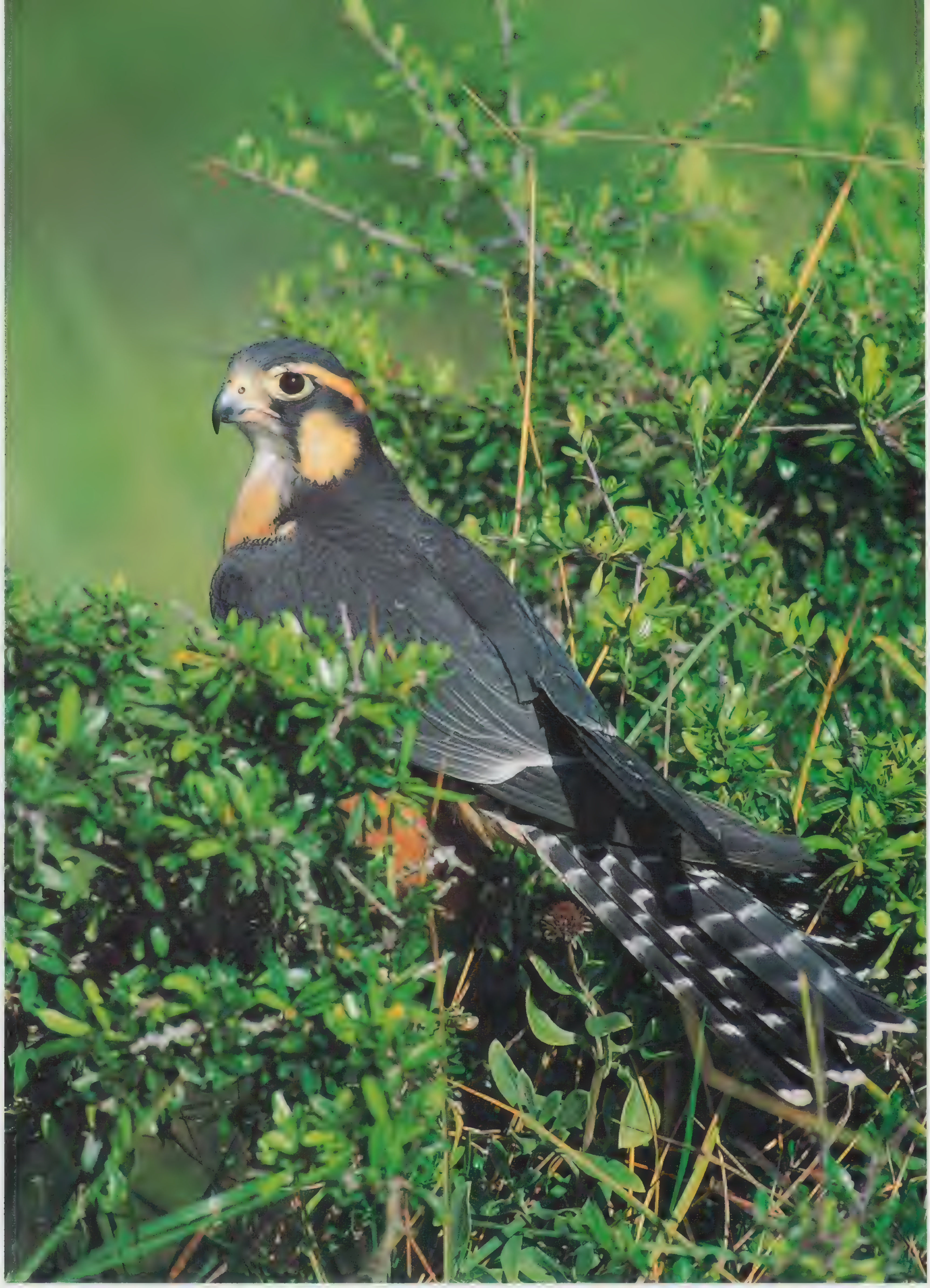




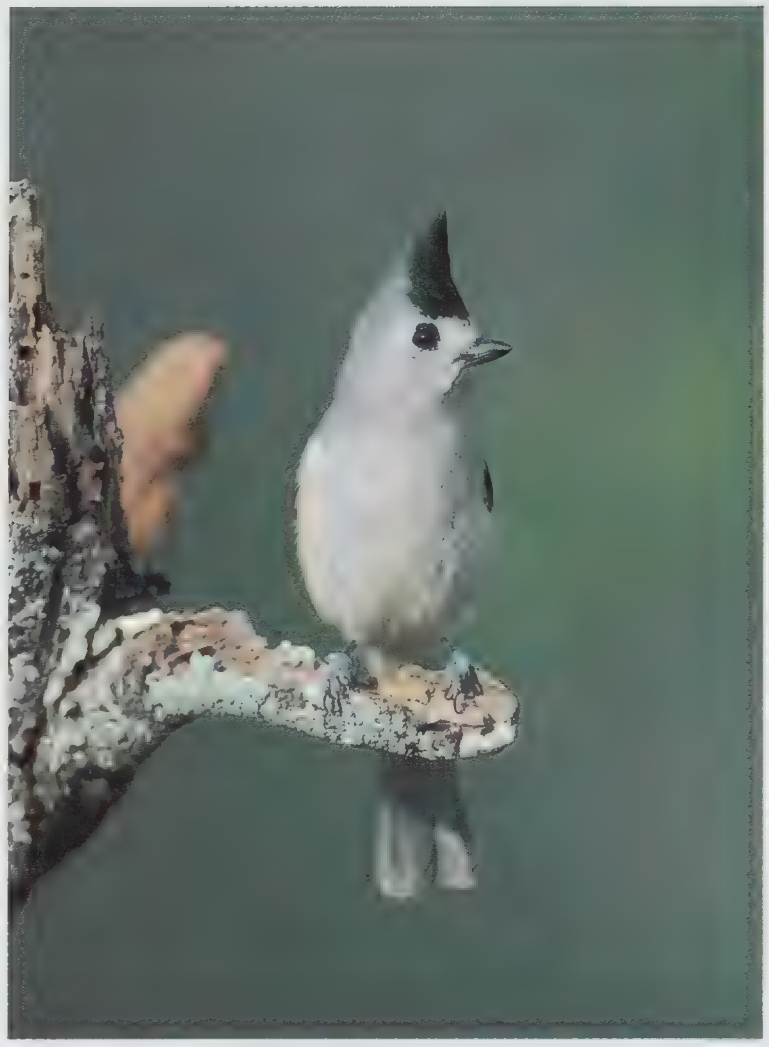
steading in South Dakota. They found two large caves in a bluff, and his great-grandfather built fronts on them, making a cozy home for himself and his family in one and a shelter for their livestock in the other. Three of their six children—including Steve's grandfather—were born in the cave. This has caused a lot of ribbing among family and friends ever since. "Every time my friend Laura and I have a disagreement about something, she'll say: 'I have to remember, you're only the second generation out of the cave,'" says Bentsen, laughing.

Photographing birds is not Bentsen's only career; he is also a small-animal veterinarian with a well-established practice in McAllen. "The beauty of having two careers is that one of them is usually producing a paycheck," says Bentsen. "The downside is that it seems like whenever a warbler fallout or something else great is happening, I can't get to it." And his heart is definitely in his photography. He started in high school, taking pictures for the yearbook, and went on to photograph rodeos, model portfolios, weddings, and

A brood of young Black-bellied Whistling-Ducks sits at the edge of a pond in Texas (above). At left, an adult looks on. These long-legged, long-necked, gooselike ducks are unmistakable. Named for their distinctive high-pitched, four-note, whistling calls, they were formerly called tree ducks.



The Aplomado Falcon used to be a relatively common raptor in the open country of southern Texas and Arizona but has long since been extirpated. Now, however, a major reintroduction is underway in Texas. The Peregrine Fund, which has already successfully reintroduced the Peregrine Falcon to the eastern United States, is breeding the birds in captivity and releasing their young at special hack sites. Bentsen photographed the Aplomado Falcon above at Laguna Atascosa National Wildlife Refuge, during the initial releases.

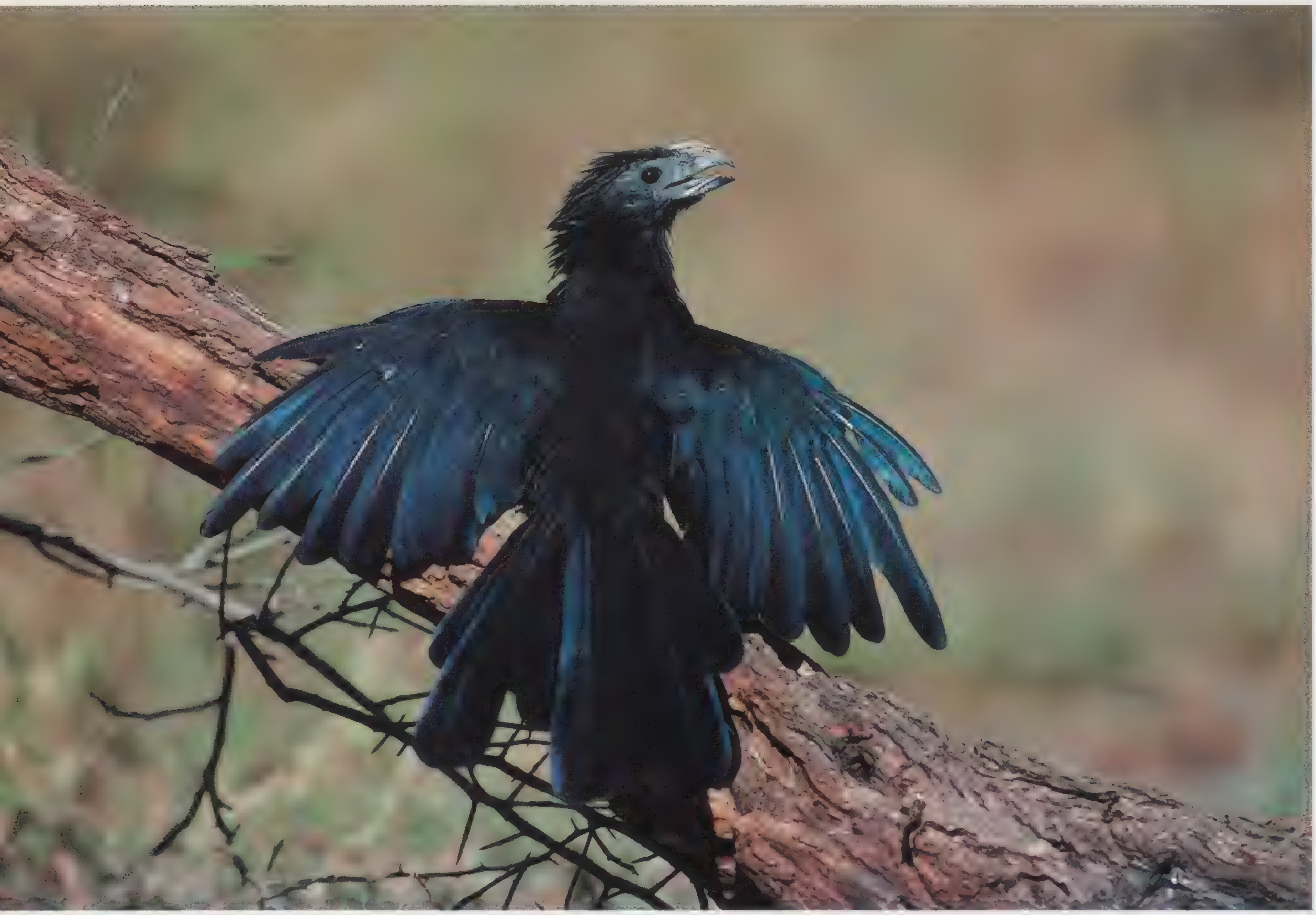


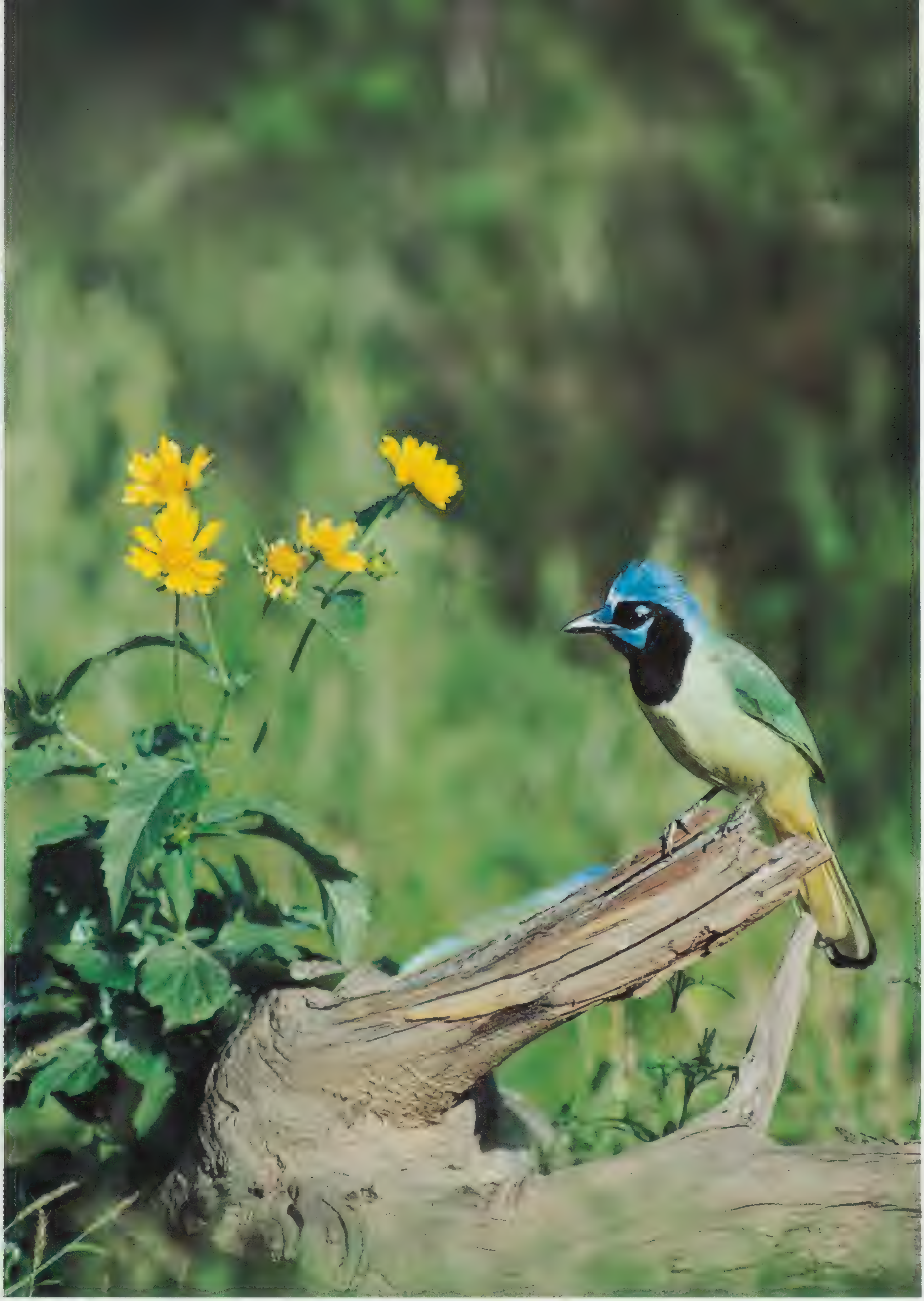
other commercial work. He eventually began photographing wildlife—mostly white-tailed deer—while working as a habitat consultant for private landowners.

"I started selling wildlife photographs to magazines in the mid-1980s," says Bentsen. "My interest gradually shifted more and more to photographing birds, and they've been my main focus for the past seven or eight years. Given my choice, I'd rather photograph them than anything else."

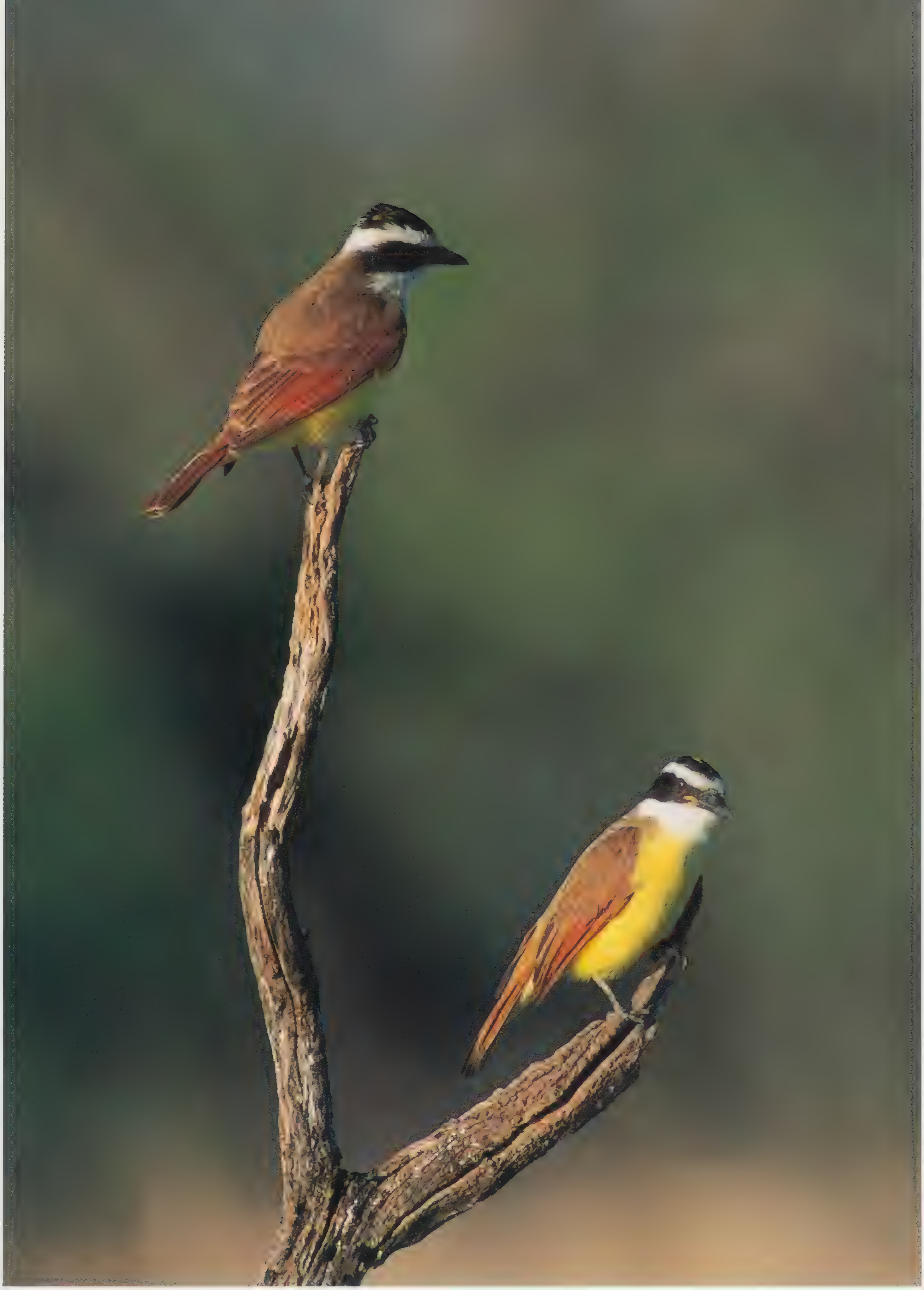
According to Bentsen, "when I got really interested in birds and their tremendous diversity, it became a goal of mine to photograph as many of the bird species of Texas as I could." When asked if he considers himself a birder, Bentsen laughs. "I avoided it for years and years—keeping any kind of list or anything," says Bentsen. "But about three or four years ago I finally just fell off the edge, and yeah! I'm a birder! I've got a life list, and I keep a year list."

The distinctively marked "Black-crested" Titmouse (at left), another South Texas specialty, is no longer considered a separate species; it is classified as a subspecies of Tufted Titmouse. Looking oddly prehistoric, a Groove-billed Ani (below) spreads its wings in the warm Texas sunshine. The bird is a common resident of farm fields and woods in the Texas-Mexico border country.





The Green Jay (above) reaches the northern limits of its range in the Lower Rio Grande Valley and is found nowhere else in the United States. To take this photograph, Bentsen set up a blind next to a waterhole at a private ranch and waited to see what would show up. In arid country, water is an irrestistible attraction to many birds, and this Green Jay was no exception.



Always scouting for new photographic locations, Bentsen saw this dead branch—which was frequented by a pair of Great Kiskadees—at a ranch in Starr County. He quickly set up a blind and waited for the birds to return. This fascinating species is usually found near water where, in addition to catching flying insects, the birds will dive for fish like a kingfisher. They are named for their distinctive kis-ka-dee *call.*

He says there's no question that chasing birds has hurt his photography. "You can either be a birder or a bird photographer, but they are different characters," he says. "What I do now is, on the days I go birding, I keep my camera in the truck, in case we find a rarity, but I don't get it out—I know it would ruin the trip for my friends. On the days I'm photographing birds, I do it alone or with another photographer."

Now, like the terrain and habitat types of his native Lower Rio Grande Valley, Steve Bentsen's interests in bird photography and birding are converging in his hometown of McAllen. The American Birding Association is having a convention there this spring and has invited Steve Bentsen and his friend, Laura Elaine Moore, to coteach a bird photography workshop. In the promotional literature, Bentsen is described as a bird photographer who enjoys birding and Moore as a birder who enjoys bird photography. "She would much rather be birding," says Bentsen. "While I love that, to me there's just something about nailing a bird on film. When I can get a great shot, it's a real thrill." ■

Bentsen had several blinds set up next to tiny waterholes near McCook, Texas. This Brown-crested Flycatcher (at right) would come in occasionally to catch bugs or have a drink. As the bird paused briefly on a small branch, Bentsen snapped this classic flycatcher study. Below, an adult White-tailed Kite tends its young. Bentsen took this pleasing family portrait at Laguna Atascosa National Wildlife Refuge.

LOST AND FOUND

BY TIM GALLAGHER

Late last year, three Americans rediscovered the Forest Owlet—an Indian mystery bird that hadn't been spotted since 1884

This past November, Pamela Rasmussen of the National Museum of Natural History in Washington, D.C., and two colleagues did something that countless ornithologists and birders have only dreamed about. They rediscovered a species of bird that hadn't been positively sighted for 113 years. Called the Forest Owlet (*Athene blewitti*), this nine-inch-long raptor is known only from seven specimens collected in India in the 19th century. The last confirmed record—a specimen now in Britain's Natural History Museum—was collected in 1884.

How this rediscovery came about is a fascinating story, involving theft, fraud, and international espionage. In the course of working on a field guide to the birds of the Indian subcontinent, ornithologist Rasmussen became aware of irregularities in the records of Colonel Richard Meinertzhagen, a World War I British spy and colorful character who early in this century owned what was generally considered to be the finest private collection of Old World birds in existence. Through painstaking research, she and her colleague, Nigel J. Collar of Birdlife International, were able to show that Meinertzhagen's specimen of a Forest Owlet—which he had supposedly collected in 1914—was a fraud and had been taken from an existing 19th-century collection (see sidebar on page 27).

Looking at the Meinertzhagen case stimulated Rasmussen and Collar to reevaluate the entire known record of the species. In so doing, they found that of the four known records of the bird in the 20th century, one—Meinertzhagen's—was fraudulent; two of them, which were supposedly supported by photographs, were actually Spotted Owlets (*Athene brama*), a common Indian species; and the fourth was an unsupported and doubtful sighting.

As she looked more closely at the few specimens of the Forest Owlet available and at a set of the bird's bones, Rasmussen was shocked to find that the bird differed markedly from the Spotted Owlet, which many people had thought to be similar or perhaps even the same species. "It was so different

Until recently, the best illustration of the Forest Owlet was the one at right, which appeared in The Scientific Results of the Second Yarkand Mission, *published in 1891. The illustration has several inaccuracies: the cheek patches are too dark and the breast is too barred; the belly, lower flanks, and undertail coverts should be completely white, not marked; the bands in the wing should be whiter; and the bill should be larger. Compare this with Larry McQueen's illustration on page 26.*

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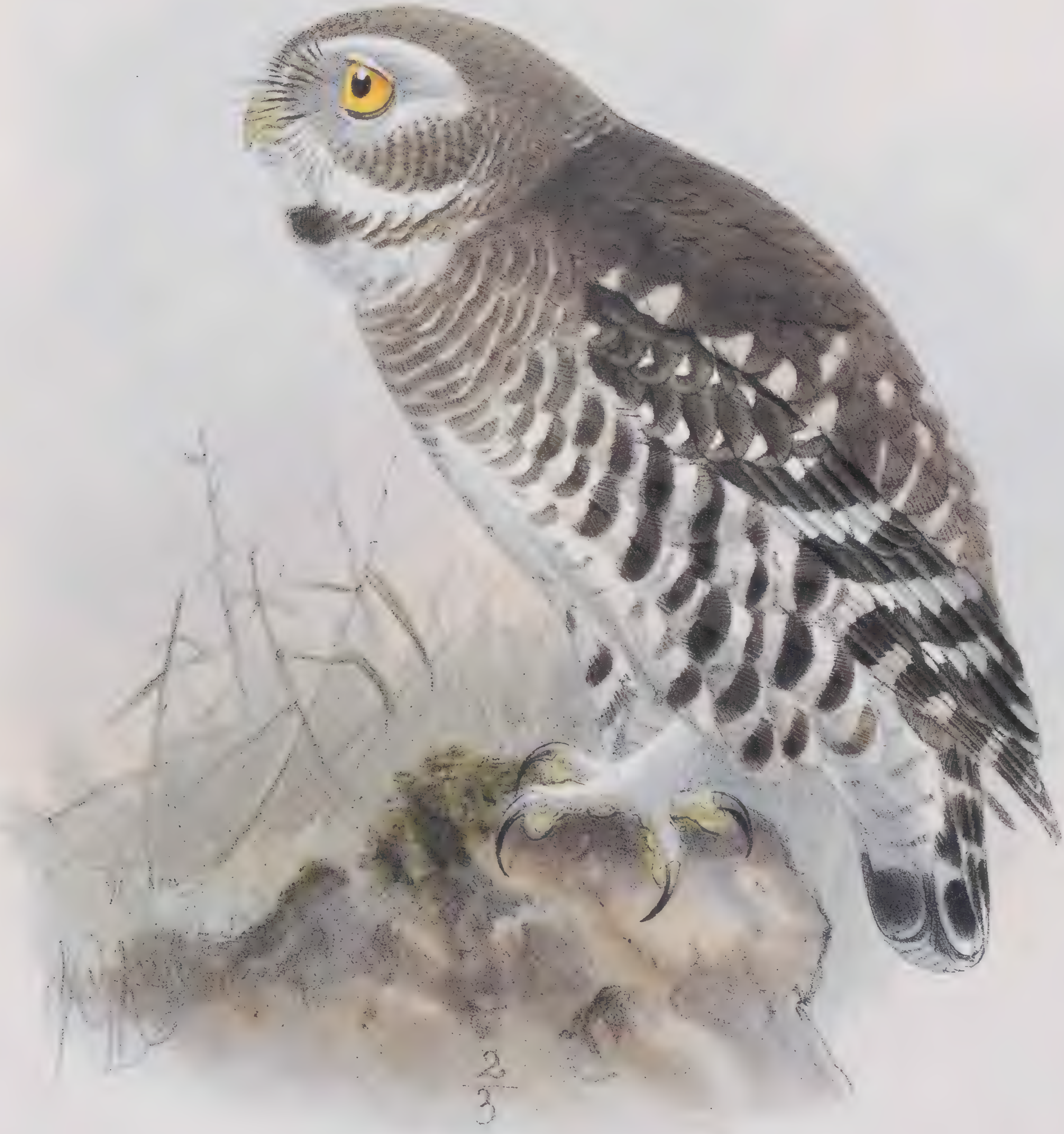
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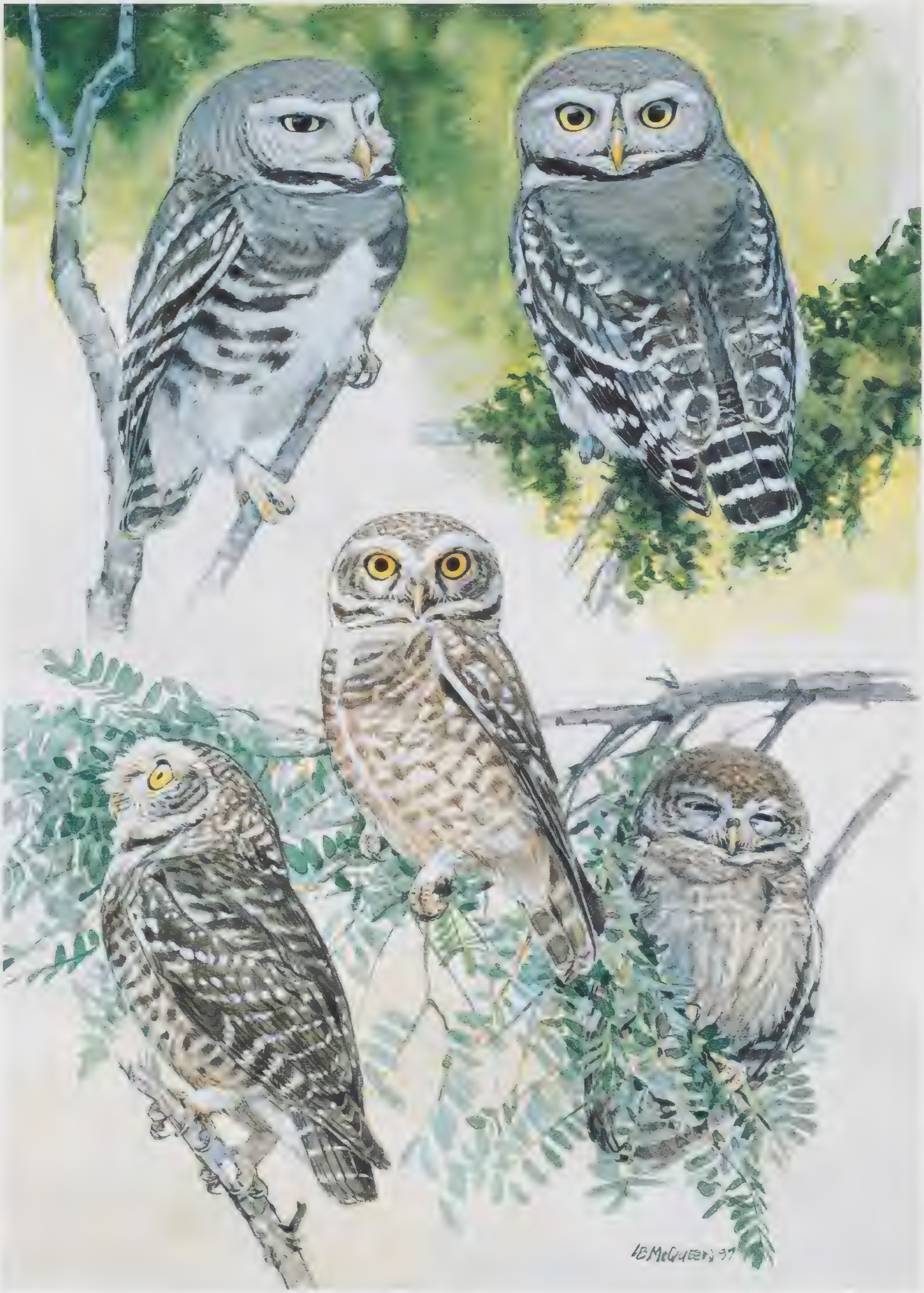
According to 19th-century reports, the plumage of the Forest Owlet was said to be virtually indistinguishable from that of the common Spotted Owlet. This was erroneous. Ornithologist Pamela Rasmussen examined specimens of both species and found that they differed markedly. At right, a recent illustration by Larry McQueen depicting the Forest Owlet (top) and the Spotted Owlet (bottom).



LARRY McQUEEN

that we feel it probably deserves to be in a separate genus," she says. "Normally in closely related birds you don't find any osteological differences—usually they're almost indistinguishable. But these bones were so different, I could hardly believe it."

Some ornithologists had considered the bird to be virtually identical in appearance to the Spotted Owlet and thought that to identify it you would have to look at its habitat. "However, we studied all seven specimens," says Rasmussen, "and in so doing found that there were quite a few differences between the plumages of these two species that hadn't been made clear in the literature."

Rasmussen also found that the scientific lit-

RICHARD MEINERTZHAGEN: SCIENTIST OR CHARLATAN?

So, who was Colonel Richard Meinertzhagen, and why is a major scientific controversy swirling around him more than 30 years after his death? He was certainly a soldier: his combat exploits dating nearly to the turn of the century are recorded in detail in his published books and personal diaries. And he was certainly a spy: the official record is murky, but according to his own accounts he assassinated 17 Bolshevik agents in Spain and attempted to rescue the Tsar and his family during the early days of the Russian Revolution. And he has been considered the grand old man of British ornithology for years, having written countless articles and several books on birds in the course of his lengthy lifetime.

What has happened to bring Meinertzhagen's once seemingly brilliant scientific career into question? An article by Alan Knox that appeared in *Ibis* in 1993 was the first to cast doubt on the veracity of the labels on some of Meinertzhagen's specimens. This raised a red flag for Pamela Rasmussen as she worked on a field guide to the birds of the Indian subcontinent, and so she and Robert Prys-Jones, leader of the Bird Group at Britain's Natural History Museum, closely checked any of Meinertzhagen's records that seemed questionable. "I found that Meinertzhagen had 14 records for the Indian subcontinent alone that were the only known records of those species or subspecies for that region," says Rasmussen. "I had to know whether to include them in our field guide, and that's how I got into this."

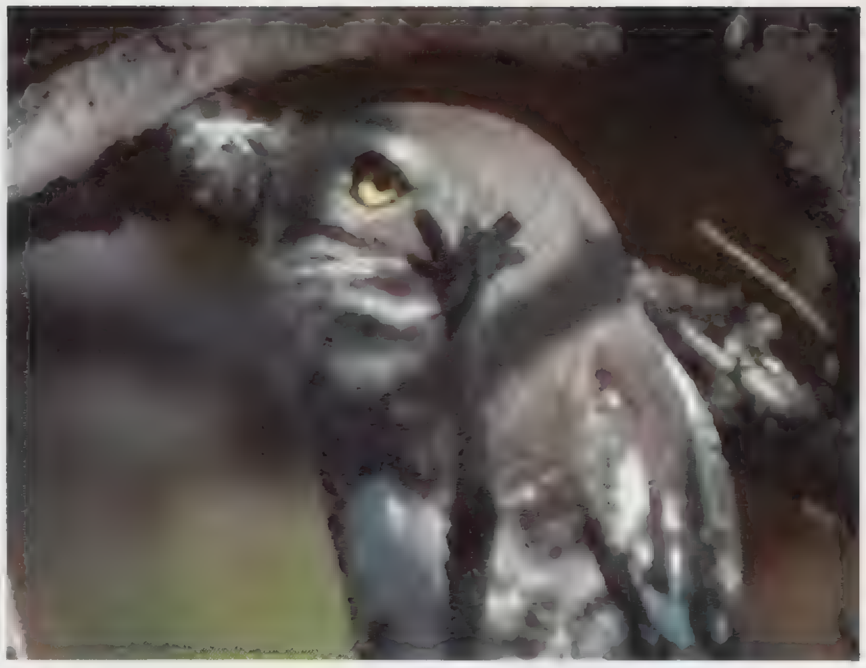
Meinertzhagen, who died in 1967, had what he described as a "uniquely perfect" collection of birds—too perfect, as it turns out. According to Rasmussen and Prys-Jones, many of his specimens were taken from other collectors' series at The Natural History Museum. He restuffed some of them, she says, and gave many of them new labels with false data about where they were collected and who collected them.

"In some cases, it was extremely misleading," she says. "There are some specimens for which the actual collecting locality is clearly hundreds of miles from where he said he got them. Sometimes the dates are several months off. That can really ruin studies of geographic variation, molt, and more." According to Rasmussen and Prys-Jones, Meinertzhagen's collection has numerous fraudulent specimens, which have probably had a major impact on our knowledge of the birds of India and many other areas where he was even more active.

One of the specimens that Meinertzhagen reportedly tinkered with was a Forest Owlet, which he said he had collected in 1914. This had previously been widely considered the last specimen record of the species. Rasmussen and Nigel J. Collar say that this specimen was one originally collected by James Davidson in 1884 but had been taken from Britain's Natural History Museum. "The original stuffing was removed, the bird was washed in solvent to degrease it, and then it was restuffed and relabeled with fraudulent data, as though Meinertzhagen had collected it himself," says Rasmussen. "There are preparation style features that indicate, without any question, that this was Davidson's specimen. And besides, Meinertzhagen's own diaries show that he never left Bombay during that period in 1914. He couldn't have collected this owlet."

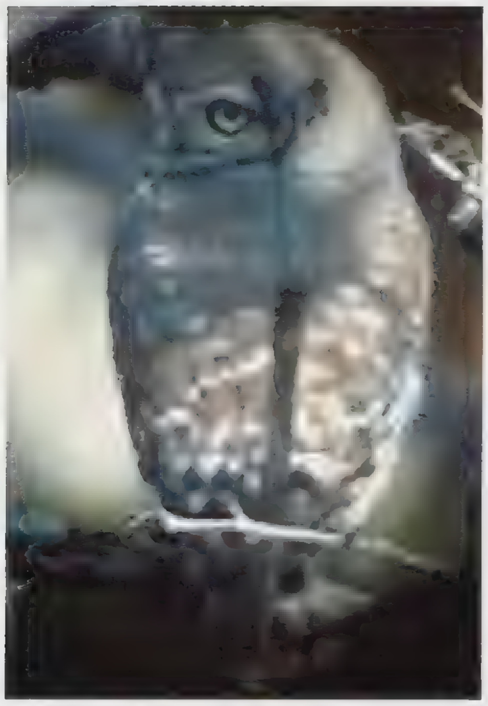
Rasmussen is currently working with Prys-Jones and Collar to sort out the fraudulent bird skins from the authentic ones in Meinertzhagen's Asian collection. Like detectives at a crime scene, they pore over bits of forensic evidence, looking for clues. "As far as we know, nothing similar has been done before," she says. "We have had to come up with new techniques." They have been x-raying specimens and have even started using CAT-scans to show that particular specimens were not prepared by Meinertzhagen. She and the others have found a number of bird skins that—like the owlet—had been taken from other collections and restuffed.

Richard Meinertzhagen's entire life story reads like an Ian Fleming novel. Was it indeed a fiction? With Rasmussen and her colleagues on the case, we may know the answer soon. — *Tim Gallagher*



PAMELA RASMUSSEN (3)

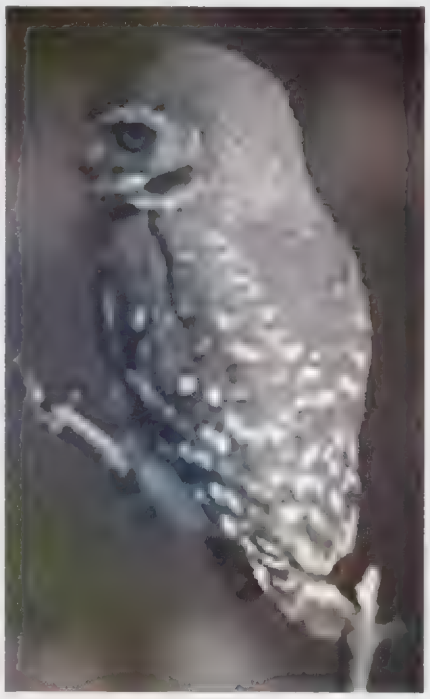
erature on the bird's distribution had been misleading. It was said to be distributed across the Indian subcontinent, when in fact it had only been found in four locations—two on the eastern side of the subcontinent and two on the western side. No records existed for the vast area in between. It also turned out that scientists had previously thought that the species must occur in hill forest, but in fact all of the specimens had actually been collected in lowland forests or valley forests along river systems. A number of searches for the birds had taken place over the years, but the researchers had apparently been looking for the birds in the wrong places. "They were not very close to any of the places where the bird had ever been collected," says Rasmussen. "So, I thought, there's still hope of finding it."



Pamela Rasmussen and David Abbott shot videotape footage of the owlet moments after Ben King spotted it in a nearby tree. Slightly fuzzy but definitely diagnostic, these images provide visual confirmation that the mysterious Forest Owlet of India has been found again—after going unreported for 113 years.

When Ben King of the American Museum of Natural History—a well-known expert on Asian birds and probably *the* expert on Asian owls said that he could go to India to look for the bird in November 1997, Rasmussen couldn't pass up the chance to search for the bird with him. Together with Virginia birder David Abbott, the three traveled to India and spent 10 full days scouring the two eastern sites. No luck. It took two-and-one-half days of driving to cross to the western areas, which seemed less promising because of their relative proximity to Bombay, one of the most populous cities in India. And then they found out that all of the plains forest they wanted to explore had been cleared long ago. They began checking some forested areas in the foothills.

At 8:30 one morning, as the tropical sun rose into the sky, beating down on the area and raising the temperature considerably, Rasmussen stopped to take a drink from her water bottle. Suddenly, Ben King stopped and, almost in a whisper, said "Look at that owlet."



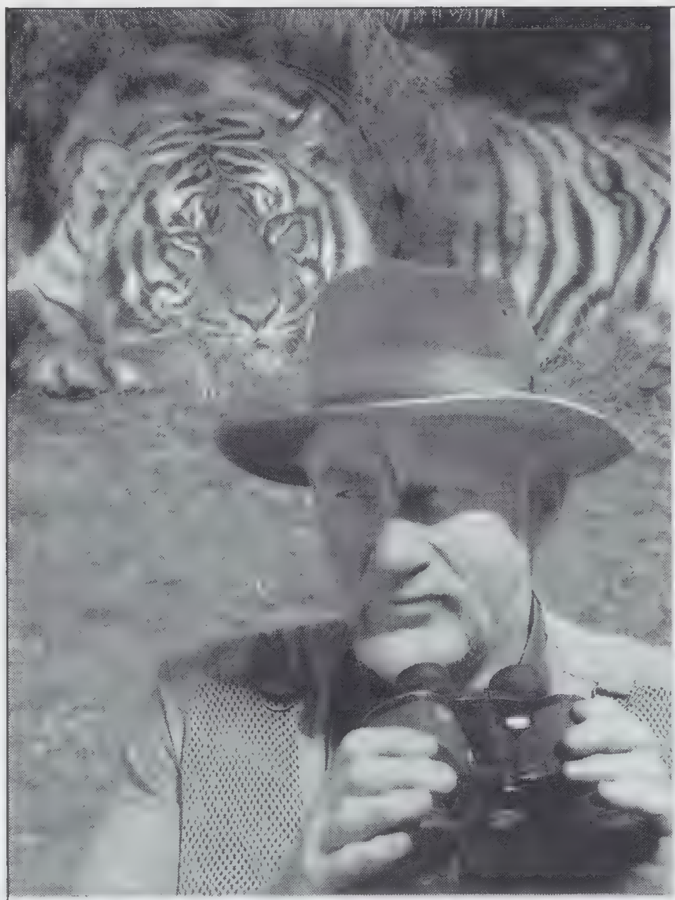
"I looked up and dropped my water bottle," says Rasmussen. "My voice got high and squeaky, and I said: 'It doesn't have any spots on the crown and mantle!' At that moment we all knew, but we were afraid to believe it. You don't want to be wrong about something like that. Anyway, a few seconds later, Ben said: 'It's *blewitti.*' My instant reaction was, this thing is going to fly, and I'm not going to be able to verify it, and I'm never going to be able to convince myself or anyone else completely that it was a Forest Owlet."

But Rasmussen and Abbott began videotaping the bird as quickly as they could and, as it turned out, the bird was extremely cooperative, staying in place for half an hour before another bird, an Indian Roller, chased it away. They returned in the evening and didn't hear the owlet calling, but the next morning they found another Forest Owlet—probably the first bird's mate—in the same location.

Rasmussen wonders how it could be that this species had been overlooked for more than a century. "A tame, distinctive-looking bird sitting out in the open in the middle of the morning? How could they have gone unseen for so long?" she says. "They must be rare, and they must be local."

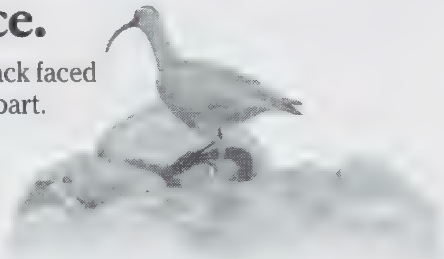
Rasmussen is currently trying to arrange a joint research project on the Forest Owlet with the Bombay Natural History Society. "There's a lot to be learned about this bird," she says. "We saw two. That only means that they're not extinct. There are probably populations of them, we just don't know . . . nobody knows. It's really urgent that survey work be done to find out how many there are, where they occur, and what their habitat needs are."

So, are there any other Indian mystery birds out there waiting to be found? Yes. The Pink-headed Duck and the Himalayan Mountain Quail have not been seen for decades and, like the Forest Owlet before its rediscovery, many people believe that these species are extinct—but there is no proof. ■

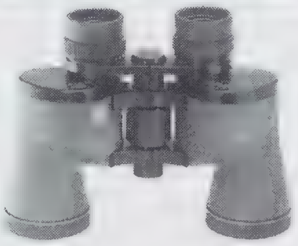


"Early Birds"

On his trip through India's Tiger Park, Warren Harrington and his Swift Audubons® found themselves between a rock and a hard place.



Getting to the nesting place of the elusive black faced Ibisbill by bus and elephant back was the easy part. Spotting the bird among the millions of grey stones of the Kosi River by the town of Ramnagar was another thing. The Ibisbill is the same color and shape as the stones around it. A worthy challenge to any birder. But once again the incredible resolving power and the bright crisp image of Warren's Swift Audubons separated bird from stone. Warren's life birds now stand at 2,985 including the Lammergeir or bearded vulture, another "really nice bird". (Rumors that the ominous cough in the bushes close by was anything more than a stork-billed Kingfisher with a bad cold have been greatly exaggerated).



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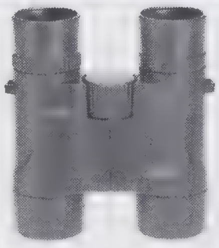

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NORTHERN PYGMY-OWL BY DONALD JONES

THE SECRET LIVES OF CROWS

BY RACHEL J. DICKINSON

Cornell researcher Kevin McGowan looks at the behavior and breeding biology of the bird we all think we know

Crows. They're often portrayed in literature and movies as harbingers of doom (who can forget the Black Menace in the movie *Bill and Coo*?) or as crafty pests (the heckling crow flock in *Dumbo*). We like them because they are curious and cheeky; we dislike them because they're loud and annoying. In our minds, we all think we can characterize and pigeonhole crows as we assign them a lot of humanlike attributes. But through a decade of research, crow expert Kevin McGowan has found that we don't know as much as we think we know, and through the fascinating process of trying to unravel and interpret crow behavior he has opened up a whole new set of questions.

JIM ROETZEL

"We basically don't know anything about these birds," says McGowan from his office at Cornell's Vertebrate Collections, where he serves as curator of the ornithology and mammalogy collections. Outside, the late afternoon winter sun is starting to set, and as McGowan gets up from his desk to fetch me a copy of some data, he pauses at his window and looks through a spotting scope trained on some distant trees. He can't help himself.

Although the American Crow is one of the best-known and most common birds in North America, only a handful of researchers are studying the species. "When I started looking at American Crows in the late 1980s," says McGowan, "the most cited source was an unpublished Ph.D. thesis from the 1950s about crows in rural Ohio." Ten years later, there is still a dearth of material about these birds.

"They're hard to keep track of," he says. "Initially, I wanted to test questions about cooperative breeding, but I had trouble following the adults—they fly too far and are too wary." And catching adult crows is difficult at best. The birds are intelligent and suspicious. Though some Australian researchers have devised a trap specifically for crows, it's big, tricky to operate, and not very portable. McGowan thinks that a cannon net might be effective—but only once in any particular area before the birds catch on and stay away—and it couldn't be used in a city, where it would probably come under the same laws that govern discharging firearms.

So McGowan decided to study the basic nesting biology of American Crows. This involves banding and placing wing-tags on nestlings in hopes of later recording and studying the movements of the birds as they grow up and disperse. Although McGowan usually has field assistants, this time-consuming process—it takes up to half an hour to band and tag each bird—sets limits on the size of his research sample. He can only process four or five nests a day. Additionally, he has only a very narrow window of time in which to tag the birds—when the nestlings have nearly full-grown feathers but can't yet fly—which further limits the sample size. "There are just so many hours of daylight in the day," McGowan laments.

Kevin McGowan grew up in Ohio, receiving bachelor of science and master of science degrees in zoology from Ohio State University and a Ph.D. in biology from the University of South Florida for his work on the social development of young Florida Scrub-Jays. He came to Cornell University in 1988 as a curatorial and research associate in the Section of Ecology and Systematics. In 1994, he was promoted to senior research associate and is the principle caretaker of Cornell's bird and mammal collections.

McGowan became interested in crows while he was still in Florida, but when he moved to Ithaca he knew he had hit crow heaven. Through a small grant from the United States Department of Agriculture he began his decade-long study of crows, which have historically been regarded as agricultural pests. One of McGowan's findings is that although crows can be local crop pests—which can be more than a nuisance to individual farmers—they have a very minimal impact on overall agricultural devastation, which dispels a popular misconception.

As he began studying crows (primarily American Crows, though he has also been following a small population of Fish Crows in Ithaca), all sorts of questions started to emerge. Are crows territorial? What constitutes a crow family? What is each bird's role in the family group? Do differences exist between rural and urban crows?

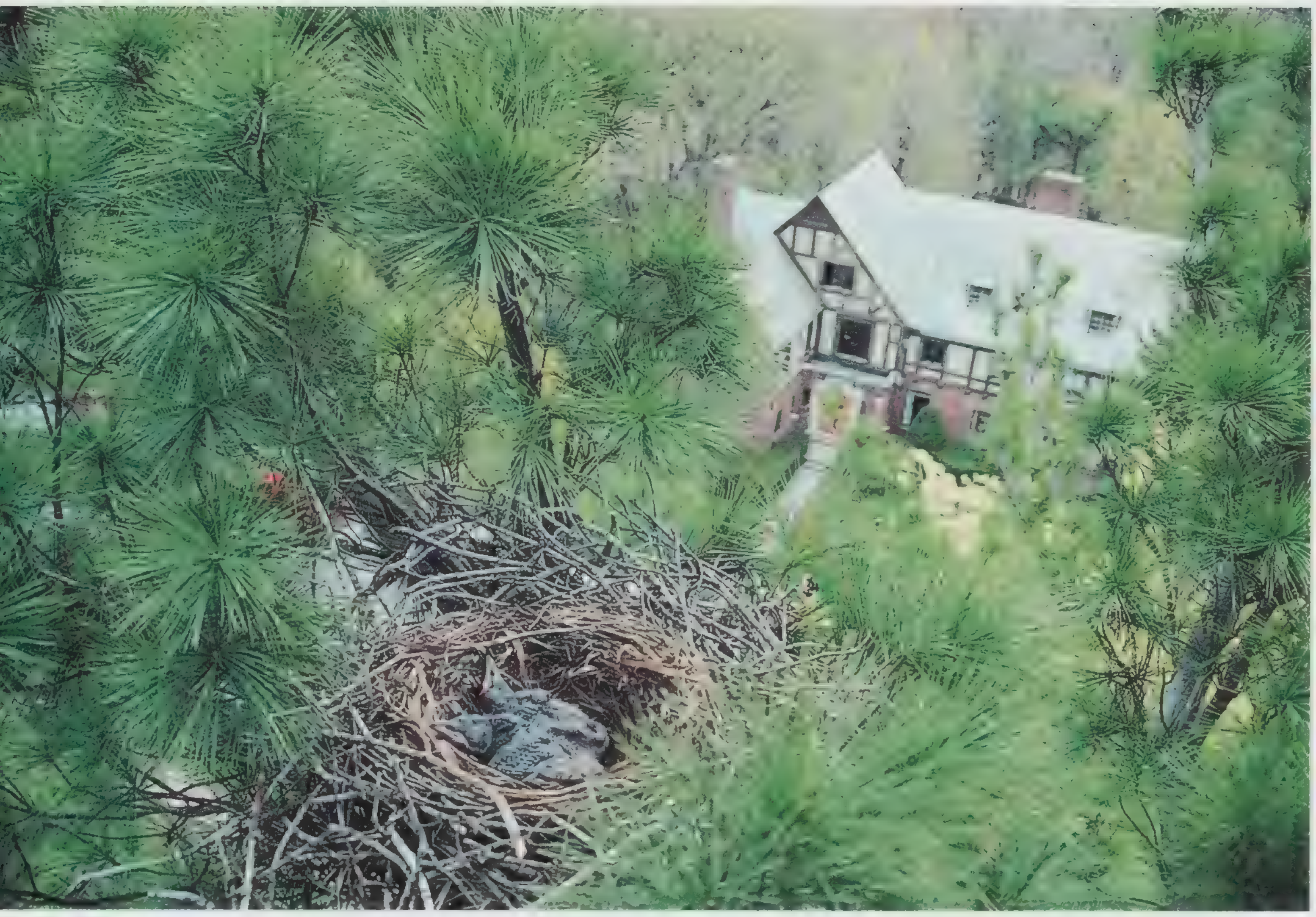
McGowan has tagged 651 individual crows from 560 nests over the past 10 years. And he has made some basic discoveries. First, American Crows are cooperative breeders. They apparently mate for life, or until a mate becomes incapacitated, and often several generations of a single family can be found helping at a nest. Older siblings, known as helpers, may take part in building the nest, feeding the incubating female, feeding the hatchlings, and chasing away predators. "Some of these families are amazing," says McGowan. "One marvelously successful crow family lives at St. Catherine's Church in Ithaca—a breeding pair and up to seven generations of siblings live on or next to the home territory there."

According to McGowan, each breeding pair has an established home territory (averaging about 10 acres in the city and much larger in the country), where they build their nests and raise young. And they hold these territories throughout the year. Nonbreeders or helpers associated with the territory may leave for a while in the winter, but many of them eventually return to their parents and their home territories. Young crows wait at least two or more years before breeding, so family groups can grow quite large—the family at St. Catherine's Church has up to 15 individuals—and it's not unusual to have three or more adults attending a single nest. This can make the demographics of the home territory pretty complicated.

Crows have several ways to become breeders: they can leave home; they can wait for

HUGH P. SMITH, JR.

For crows, three is obviously not a crowd (above). It's not unusual for pairs to have young from previous seasons helping them raise their current brood. How much do we really know about crows? According to Cornell researcher Kevin McGowan, "We basically don't know anything."



“Nests are not homes. They’re just temporary structures that serve a purpose.”

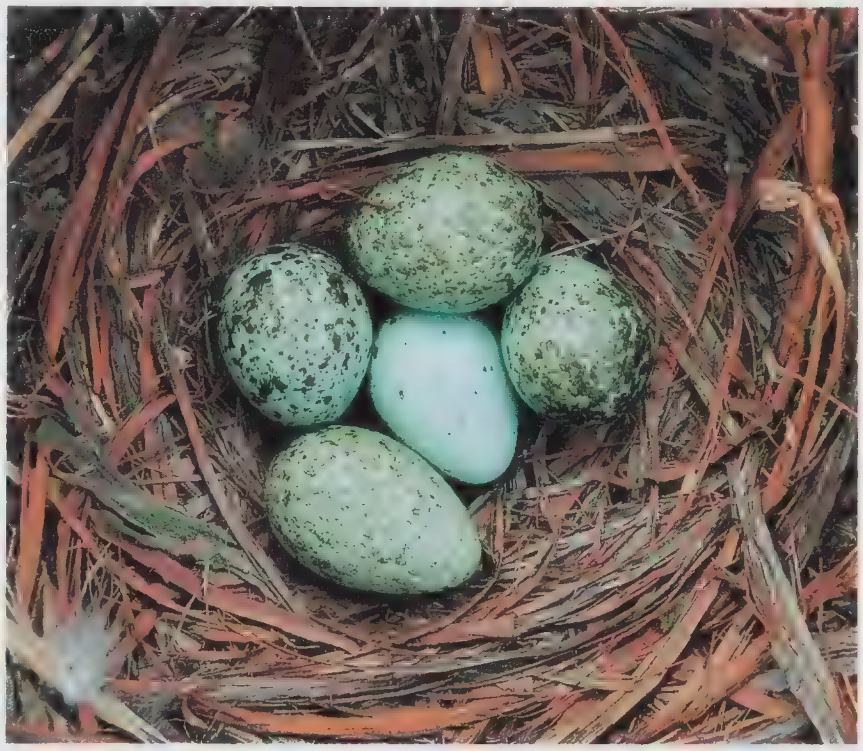
The typical crow’s nest is a well-built structure of sticks and twigs woven tightly together and lined with grasses. A number of the nests McGowan studies are located in urban settings (above). Comparing urban nests with rural nests, McGowan found that the city crows produce one fewer young than the country crows and their offspring are significantly smaller. At right, a clutch of crow eggs. Kevin McGowan climbs to each of his study nests at least twice each season. At far right, he hoists himself aloft on a rope using ascenders.

another crow in the neighborhood to die and then take its territory; they can take over a portion of their parents’ territory; or they can essentially inherit their parents’ territory when they die. McGowan found that American Crow family groups are dominated by males—male offspring tend to stay close to home whereas their sisters disperse.

McGowan’s research area includes the City of Ithaca and its surrounding suburbs, then north to the Tompkins County Airport and east to Willow Glen cemetery outside of Dryden, a village about eight miles from Ithaca. He tracks between 50 and 75 nests each year, and between 45 and 75 percent of them successfully produce young. “I tend to keep track of the crow families I’ve followed the longest,” says McGowan, but he also adds new families each year to expand his research pool. Each nest produces on average four-and-one-half eggs annually, from which three birds usually fledge. Great Horned Owls, Red-tailed Hawks, raccoons, and even squirrels prey on crow eggs and nestlings, so crow parents go to great lengths to conceal and then protect their nests.

“Nests are not homes,” stresses McGowan. “They’re just temporary structures that serve a purpose.” It behooves the young birds to get out of the nest as quickly as possible, so that they will be less vulnerable to nest predators. Compared to the nest-success rate of birds that build small open-cup nests (only one-third of their young fledge), the nest-success rate of American Crows is high. Crows rebuild their nests every year, so in March, when McGowan starts looking for crow nests, he knows that a nest won’t be in the same location as it was the previous year, but that it will be somewhere on the family’s territory.

From late summer until the following spring, a lot more activity takes place away from the territory because the need to feed and defend the young is gone. Some crows migrate to Ithaca from northern Canada and join the nonbreeding flocks that spend their days foraging around the countryside. But toward dusk, you’ll notice all of a sudden that no crows are around—they’ve all gone to congregation areas to prepare for the night’s roost. “There’s a lot of talking back and forth and playing around at these preroosting sites,” says McGowan. Then as it gets dark, they take off and head into the trees and their roost. Even the breeders sleep in the roost and leave early in the morning to head back to their territories. McGowan found a roost in Cayuga Heights, a suburb of Ithaca,



KEVIN McGOWAN (2)

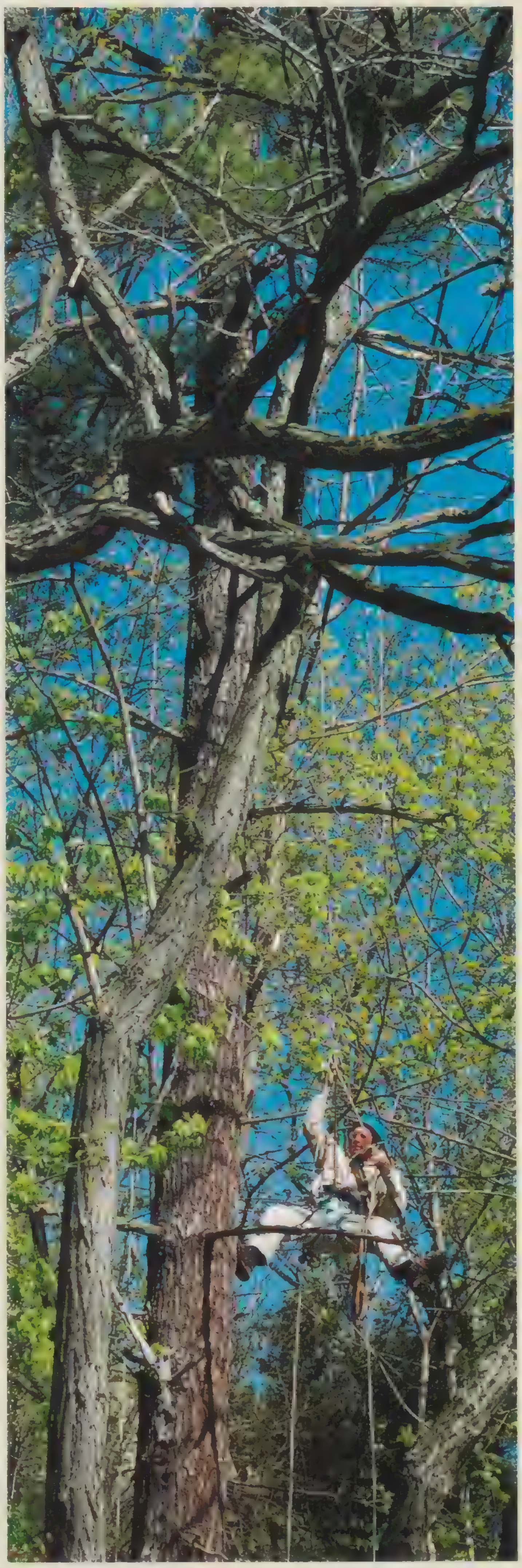
A VISIT WITH SOME CORNELL CROWS

It is a warm morning in early May, and we are congregated in the parking lot above Cornell University's Synchrotron lab. Kevin McGowan is here, along with two student assistants, *Living Bird* editor Tim Gallagher, and myself. Quickly donning hardhats, we follow McGowan to the nest site—a tall, straight pine tree at the edge of a picturesque gorge. Below us, Fall Creek flows swiftly past, roaring as it crashes over a waterfall a few hundred feet away.

McGowan is hauling climbing gear, ropes, and bags filled with banding and tagging equipment. One of his assistants brings a laptop computer for recording the data.

"There's the nest," says McGowan, pointing to a well-constructed stick structure placed high in the tree. He ties his heavy climbing rope to a length of parachute cord that he already has in position over a large branch near the nest and hauls it up. When it's safely in place, he threads the rope through a large loop on his harness. *Caw! Caw!* Some adult crows angrily scold from some nearby branches.

Slinging a bucket over one shoulder, McGowan climbs right up the rope as it dangles in the air, using climbing tools called ascenders to hoist himself aloft. He tells us this is nothing; he has climbed as high as 125 feet to reach a nest. He makes swift progress as he goes up the tree. As he nears the nest he calls out, "Watch out for jumpers." Not 15 seconds later we hear a commotion, and a nestling bails over the side of the nest, fluttering down, down, down through the pine boughs. Tim Gallagher hustles off the wooden walkway where we've set up camp and scrambles down the side of the gorge. He catches the young bird and carefully brings it back up to the walkway.


TIM GALLAGHER

McGowan has reached the nest. The adult crows are enraged now, and they swoop and call out at the intruder. He puts the three remaining nestlings in his bucket and quickly rappels down the tree. When he reaches the walkway, he puts his birds in separate paper bags so that he can collect any fecal material they may excrete and use it for later analysis. He takes the bird from Gallagher and begins to take measurements—wing length, weight, and so on—and to dictate notes. The student assistant types all of his comments and data into the laptop computer.

McGowan takes out a leg band and two wing tags. The bird is so young that the leg band looks like a knee sock. He places a wing tag—a black plastic square with two block letters on it to identify the individual crow—on each wing. McGowan unconsciously strokes the bird's head while he takes the data, calming it down.

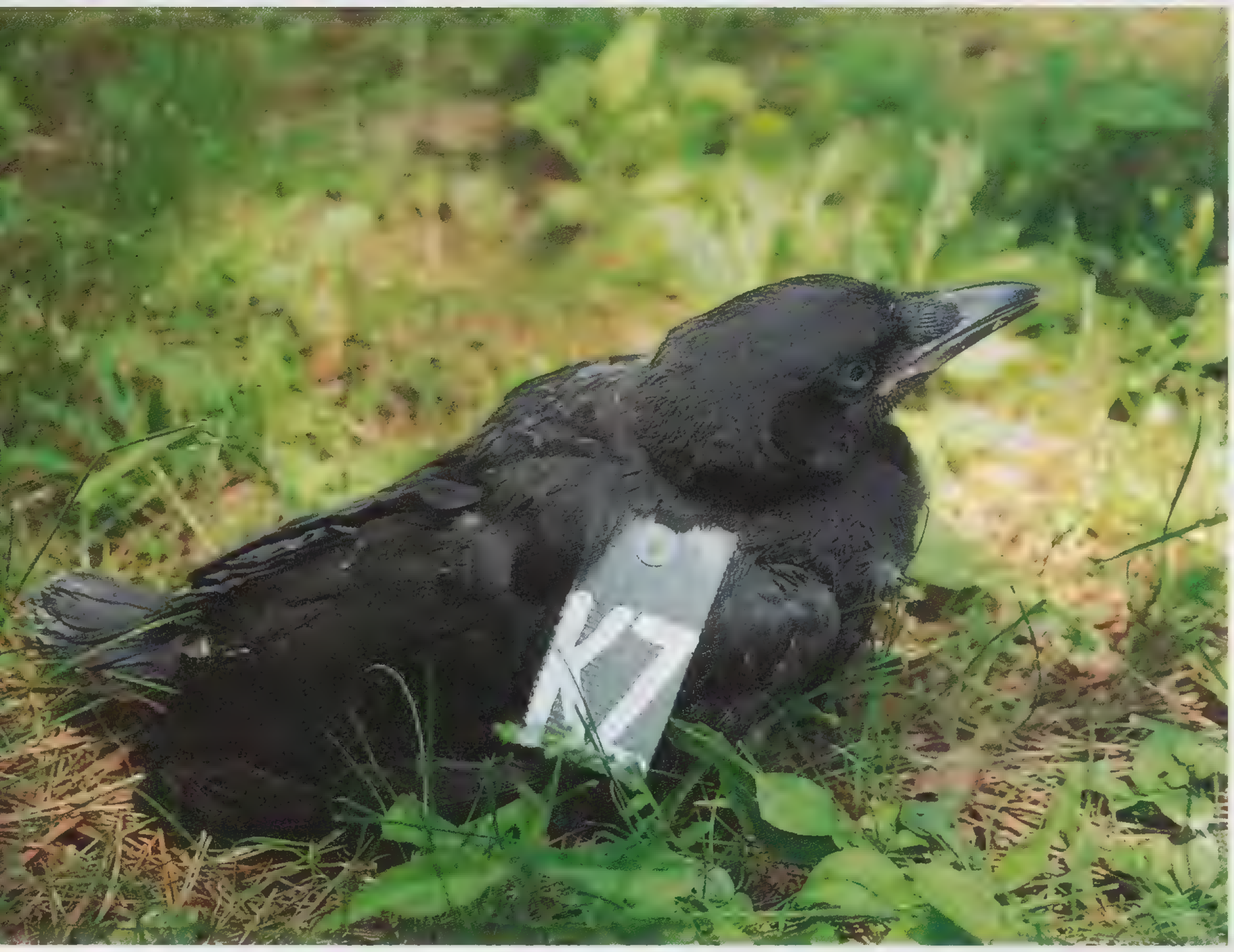
Each bird gets the same treatment. McGowan points out the differences between the birds and gives us general information about basic nest biology and crow behavior. As he works, the birds are quiet and seem calm under his experienced handling.

When he takes the last bird from its bag, I gasp, because it is so much smaller than the others. McGowan expected this—on a previous visit to the nest he had noticed the discrepancy in size. The bird looks pathetic compared to its siblings. Although he takes some measurements, McGowan does not band or tag the bird because he knows it isn't going to make it.

The birds go back into the bucket. We watch as McGowan heads up the tree again to place the young birds in their nest where they will remain for about another week.

— *Rachel J. Dickinson*

that had about 1,200 birds in it, which is actually not that large compared to some. Apparently a roost at the state penitentiary in Auburn, New York, numbers between 25,000 and 40,000 crows. And these are big, noisy birds.



Each young crow in McGowan's study nests is banded and also equipped with a lettered and colored tag on each wing (above). The letters are unique for each individual, and the color indicates the year of its birth. At right, McGowan poses with a newly tagged young crow just before returning it to its nest.

A couple of winters ago, McGowan censused the large flock of crows that congregated at Cornell University's Game Farm each day to feed on the constant food source of manure and corn. He wondered which crows these were and where they came from. The birds were coming and going constantly. He censused the flock 32 times, and of the approximately 200 individuals that were there at any one time, he counted and identified 67 tagged crows. But half of them were there only once. "It's just like going to the mall," he said. "Although it's packed with people every day, the individuals change."

Ithaca and its suburbs have about 200 crow territories, but in the rural parts of the county, the nests probably number in the thousands. McGowan began wondering whether any differences exist between urban and rural crows, so he started tracking 10 to 20 rural crow families each year. "Crows didn't move into towns and cities until the late 1950s," says McGowan. And although crows are opportunistic, he was curious about how well they were adapting to city life. What he found surprised him. "The urban nests are marginally, though not significantly, more likely to succeed," says McGowan. "But the rural crows produce one more young per successful nest and the nestlings are substantially larger—50 grams larger—than urban nestlings."

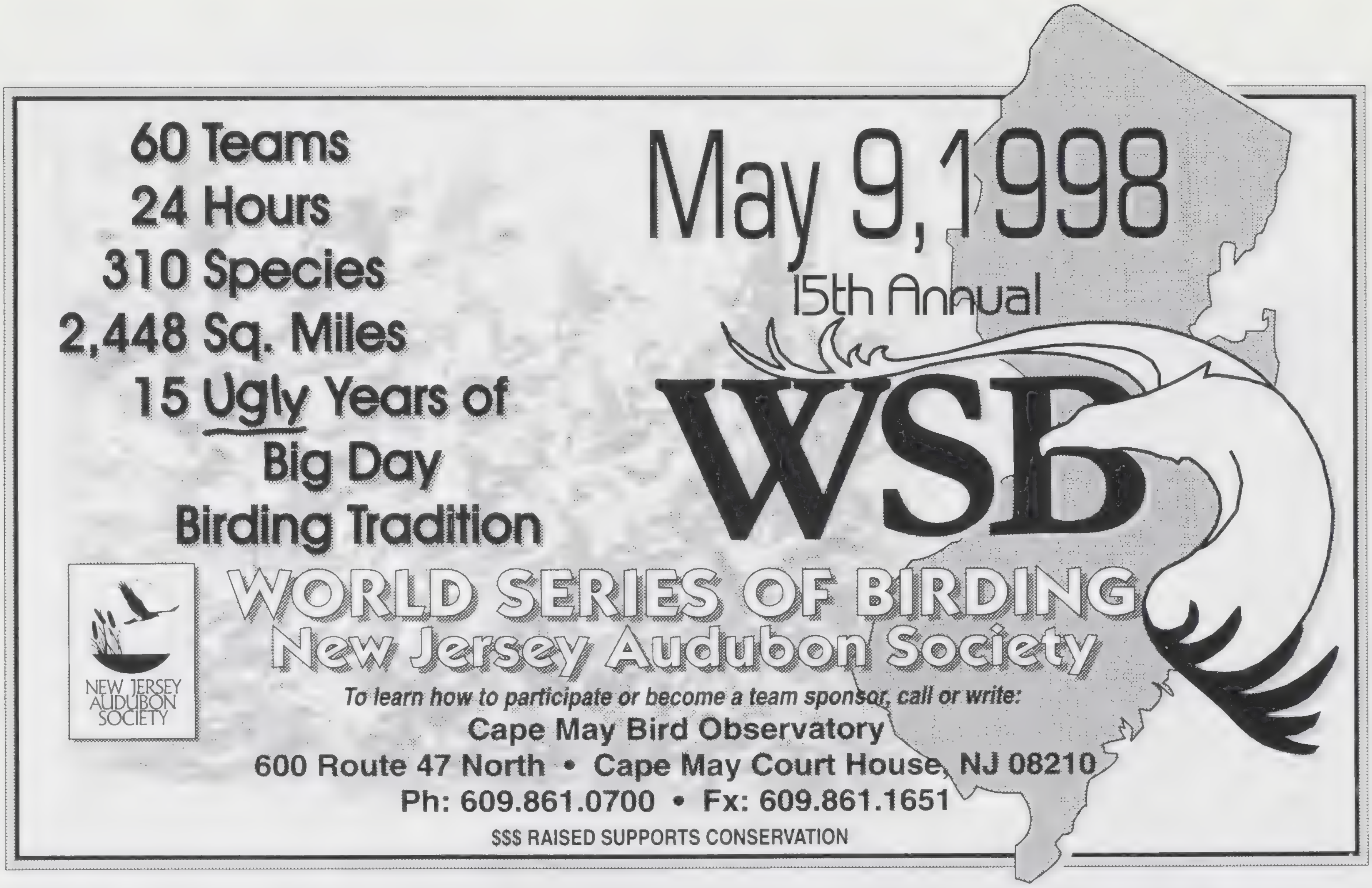
This finding surprised McGowan. After all, the city birds have a constant food source with the weekly trash pickups. Then he found part of his answer. Several years ago a drought hit the area—it was among the top 10 driest winters on record and one of the driest springs ever—and, according to McGowan, the urban crows fared poorly. That led him to realize how dependent even the urban crows are on one particular food source: earthworms, which were extremely scarce and rarely came to the surface during the drought.

McGowan also suspects that city territories are too small and that urban crows are not getting reliable cues about how large a territory needs to be to ensure survival. But to McGowan this just illustrates how little we know about the rules crows follow about territories—for example, how are they established, who stays, and who leaves?

As I write this article, it is still winter in Ithaca. Six inches of snow blanket the ground, and the temperature is hovering in the low thirties. Now, of course, everywhere I look I see groups of crows. I search each flock for "Kevin's crows"—ones with square plastic wing tags marked with large block letters that identify the individual crow and different colors for each generation. I tell him I don't see many tagged crows around. McGowan laughs. "Remember, my crows disperse into a population of 125,000 crows," he says, "and I've only tagged 651 of them." ■

Rachel J. Dickinson is a freelance writer based in Freeville, New York. Her articles frequently appear in this magazine.

TOP: KEVIN McGOWAN. BOTTOM: TIM GALLAGHER.



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BIRD BIOGRAPHIES *for the* 21ST CENTURY

BY JOHN W. FITZPATRICK

Momentum builds as The Birds of North America *reaches the halfway point, and the Lab of Ornithology becomes its co-producer*

You are walking in the woods on a beautiful morning in late January, and a Black-capped Chickadee begins to whistle its two-note *fee-bee* song. "Hmm," you ponder, "I haven't heard that whistle since last summer. I wonder why they make this call." You vow to look it up somewhere when you get home. . . .

Birding in the swamp thickets of eastern Texas, you chance upon an Anhinga at close range. Admiring this bizarre creature through binoculars as it twists a snake-like neck and bobs its head at your presence, you notice that a big flap of bare skin around its eye is a dazzling sky blue. "Wow, I've never seen that color on an Anhinga before! Is this a different species?" But your bird guides offer no clue.

ART/SCIENCE STUDIO

One of the great joys about birds is that common species can be as much fun to watch as rare ones. Regardless of how much or how often we look at them, we never stop noticing new things. For anyone who has fun *thinking* about birds while watching them, nothing is more satisfying than having a nagging question answered about their looks, behavior, or distribution. Indeed, no question is too obscure for the curious bird watcher to dream up. Curiosity about birds feeds our love of them.

Since Alexander Wilson's *American Ornithology* was published in the early 19th century, specialists have responded to this thirst for written information about birds. Most of the many available books, however, are superficial. Only a very few ornithological works throughout history have been complete enough to earn the title "monumental" in the minds and libraries of the general public. Those works that did earn such a place are familiar to any reader of this magazine. In the last century, John James Audubon's *Birds of North America* surpassed Wilson's more scholarly work to claim top honors in scale and popular recognition, but this is because Audubon transcended the realm of information to encompass that of fine art. In this century, one magnum opus stands out among all others in North American ornithological libraries, and it took nearly 60 years to complete. Arthur Cleveland Bent's *Life Histories of North American Birds* was a monumental work indeed.

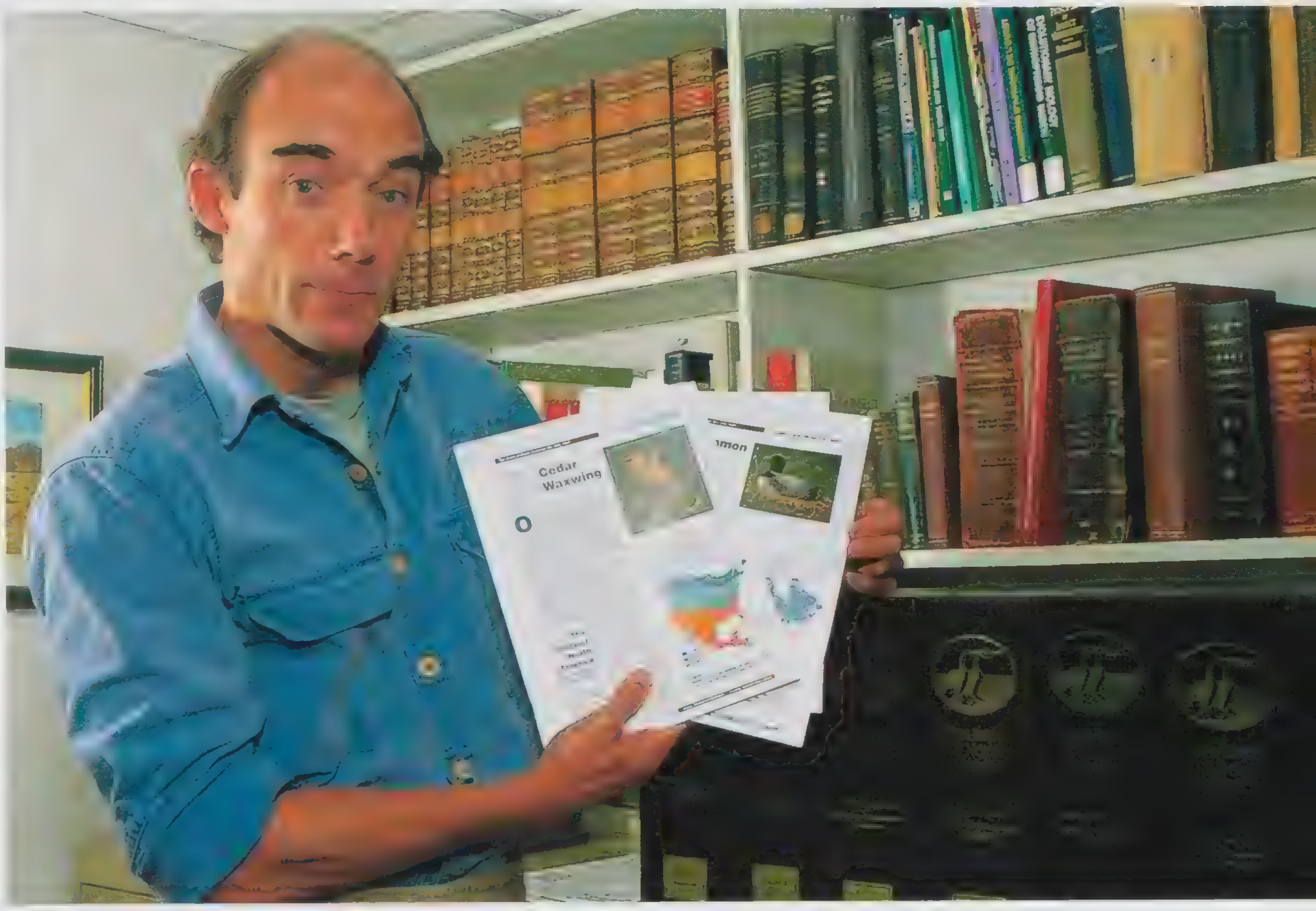
The timeless value of Bent's life histories far exceeds their usefulness as a compilation of facts about every bird species in North America. Many of the "facts" themselves we now recognize as incomplete, outdated, or even fanciful. Bent's unique accomplishment was to assemble first-hand accounts about birds from hundreds of 19th-century naturalists and explorers. These he wove together with his own, and in so doing he supplied all generations to come with an exquisitely detailed look at the bird life of the American pioneer era. Every time I read a Bent biography I am transported—to the rugged days before light bulbs and gasoline engines, to giant flights of Eskimo Curlews and Passenger Pigeons, to the great eastern forests before they were felled. For me, reading Bent's accounts is to jump back into a Frederick Church painting while researching some arcane technical fact about birds. Lovers of birds always will be grateful to Bent for pursuing his monumental labor of love.

The Torch is Passed

Long frustrated by the absence of an accurate, comprehensive, up-to-date handbook of North American birds, professional ornithologists knew it was time to pass Bent's scientific torch to a new series of bird life histories, aimed at fulfilling the needs of scientists and bird watchers now and in the century ahead. Launched in 1992, *The Birds of North America* (*BNA*) emerged as a genuinely communal effort to create such a compendium. What is being created is a truly massive enterprise to summarize all that is known—and unknown—about every bird that breeds north of Mexico. The project is monumental, indeed, and is aptly described by the moniker on its promotional brochure, "Life Histories for the 21st Century."

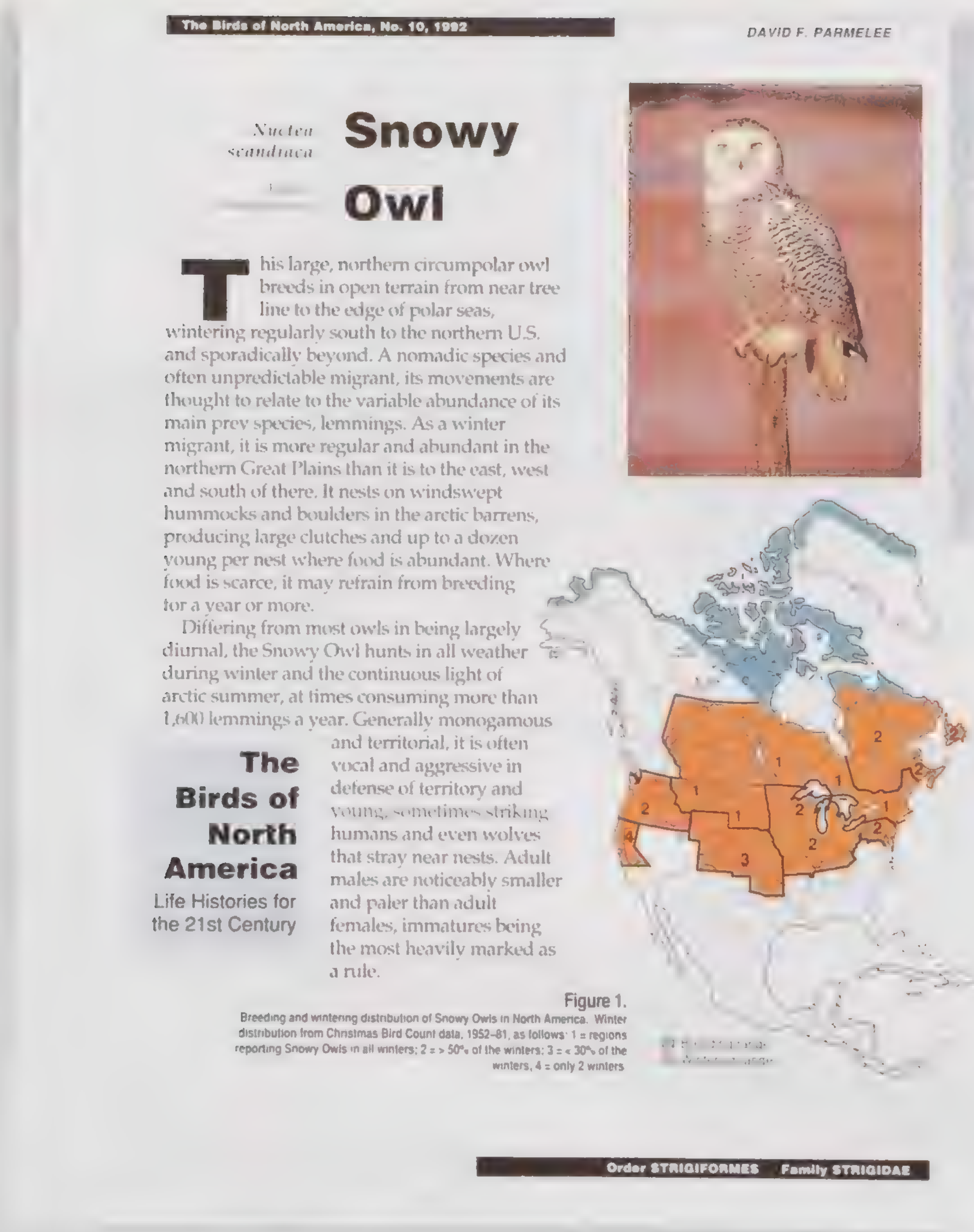
In this age of information, assembling every fact and factoid about more than 700 species of birds would be impossible for any one person to complete. (Several previous efforts by respected ornithologists had failed utterly at the task.) Recognizing this problem, the American Ornithologists' Union (AOU) established in 1990 a management committee that would begin soliciting authors for a wholly new approach. Separate species accounts would be published immediately as their authors completed them. This idea was not entirely new: the American Society of Mammalogists had successfully launched a comparable project more than a decade earlier. Most mammals, however, are small, nocturnal, and difficult to study, so the amount of information available for most of them is limited. In contrast, a tremendous body of literature exists for most North American bird species. Synthesizing this information in a uniform way for all 720 species would take a concerted effort and would require a fully dedicated staff, a business and marketing plan, and plenty of money. *The Birds of North America* was born, and Frank Gill, then chairman of ornithology at the Academy of Natural Sciences of Philadelphia, was named its volunteer executive director and editor. Gill has since become senior vice president for science at the National Audubon Society but retains his volunteer leadership role in this ambitious project.

The plan for *BNA* was to publish separate, chronologically numbered species accounts at the rate of about 70 per year over a 10-year period, treating every bird species known to breed in the United States (including Hawaii) and Canada. Funding for the initial few years was quickly raised from sales of advance charter subscriptions, grants to the AOU, and



The Birds of North America *project aims to provide something long needed in American ornithology—an accurate, comprehensive, up-to-date compendium of all that is known about every bird that breeds on this continent. Above,* BNA *managing editor Alan Poole holds up several* BNA *accounts. These accounts, which will soon span seven feet on a library shelf, will also span a century of ornithological research.*

DOUG WECHSLER



The Birds of North America, No. 10, 1992

DAVID F. PARMELEE

Nyctea scandiaca

Snowy Owl

This large, northern circumpolar owl breeds in open terrain from near tree line to the edge of polar seas, wintering regularly south to the northern U.S. and sporadically beyond. A nomadic species and often unpredictable migrant, its movements are thought to relate to the variable abundance of its main prey species, lemmings. As a winter migrant, it is more regular and abundant in the northern Great Plains than it is to the east, west and south of there. It nests on windswept hummocks and boulders in the arctic barrens, producing large clutches and up to a dozen young per nest where food is abundant. Where food is scarce, it may refrain from breeding for a year or more.

Differing from most owls in being largely diurnal, the Snowy Owl hunts in all weather during winter and the continuous light of arctic summer, at times consuming more than 1,600 lemmings a year. Generally monogamous and territorial, it is often vocal and aggressive in defense of territory and young, sometimes striking humans and even wolves that stray near nests. Adult males are noticeably smaller and paler than adult females, immatures being the most heavily marked as a rule.

The Birds of North America

Life Histories for the 21st Century

Figure 1.

Breeding and wintering distribution of Snowy Owls in North America. Winter distribution from Christmas Bird Count data, 1952–81, as follows: 1 = regions reporting Snowy Owls in all winters; 2 = > 50% of the winters; 3 = < 30% of the winters, 4 = only 2 winters

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SNOWY OWL
The Birds of North America, No. 10, 1992
Figure 5
The American Ornithologists' Union
BREEDING
The Academy of Natural Sciences of Philadelphia
A. Poole, P. Stettenheim, and F. Gill, Editors

several generous donations. Additional funding subsequently flowed from sales of "regular" subscriptions, in which recipients are billed as each new volume of 40 accounts is mailed (see the box at right for ordering details and a special offer for Lab members).

Halfway Home, with Critical Acclaim

The first volume of *BNA* was mailed in April 1992 (species account number one covered the Barn Owl). Remarkably, for a project of this magnitude and with so many different players, the series has remained steadfast to its ambitious publication schedule ever since. By the end of 1997, the 1,200 subscribers had received 320 species accounts, another 40 were at the printer, and the project raced past the halfway point precisely on time. Volunteer authors have been contracted for every one of the remaining species. (The Mallard was among the last species to gain a committed author, and with so much information to cover it required veteran author and Brewster Award winner Frank McKinney to muster the courage.)

BNA accounts vary in length from 12 pages—for little-studied species such as Least Bittern, Vaux's Swift, and Olive Warbler—to 32 pages, for some of the best-studied species, such as Spotted Sandpiper, Purple Martin, and White-throated Sparrow. The front page of each account includes one or two color photographs showing typical plumage, a detailed range map showing breeding, year-round and wintering distributions, and several paragraphs of opening text that lure the reader inside.

Although the species accounts are prepared almost exclusively by professional ornithologists, and the writing style is mostly telegraphic (to save space), *BNA* accounts are easily accessible to readers of all ages and every walk of life. Facts are summarized about plumage and structure, molt, measurements, distribution, population status, evolutionary relationships, migration, habitat, food, vocalizations and other displays, behavior, breeding biology, social organization, demography and life span, conservation and management, and other miscellaneous biological attributes. The annual cycle of breeding and molt is summarized for each species, using a standardized circular figure divided into 12 months. Most accounts include sonograms of the principal vocalizations, sketches of certain postures or behavior patterns, and black-and-white photographs of typical habitats.

Finally, each account includes a comprehensive list of literature citations—one of the

ART/SCIENCE STUDIO (2)

BNA NOW AT ROCK-BOTTOM PRICE FOR LAB MEMBERS!

A limited number of charter subscriptions to *The Birds of North America* are now available to members of the Cornell Lab of Ornithology, in celebration of the Lab's joining the *BNA* production team. While the offer lasts, Lab members may purchase the entire 18-volume set (all 720 accounts) for the historically low price of $1,690 (a savings of $560 over the current individual charter price).

For more information or to place your order, please contact Pat Warner, *The Birds of North America,* 1900 Ben Franklin Parkway, Philadelphia, PA 19103; telephone: (215) 567-1170; e-mail: <warner@birdsofna.org>; web site: <http://www.birdsofna.org>. Be sure to mention that you are a current member of the Lab of Ornithology and would like to receive the special rate.

FLORIDA SCRUB JAY BY TIM GALLAGHER

most useful features of the entire project. Thus, besides providing a detailed overview, these *BNA* accounts will open the door for motivated readers to enter the primary, published record for every North American bird species.

With hundreds of authors contributing material, it is inevitable that accounts vary in strength and comprehensiveness. To alleviate this problem somewhat, and as a professional safeguard to ensure the accuracy of the information, all accounts are carefully reviewed by a panel of experts in several ornithological disciplines. Each account is returned to the author at least once with reviewers' criticisms and requests for additional information. Early accounts contained the occasional editing error (for example, the White-winged Crossbill was placed in the wrong family) as bugs in the process were worked out. After that, however, *BNA* soon became a superbly edited series thanks to the skill of its managing editor, Alan Poole (a noted expert on the Osprey), and an extraordinary production staff that has remained in place since the beginning. Professional reviews of the series are unanimous about its profound significance in ornithology. Already, *BNA* is universally recognized as an absolute must for any serious ornithological library. This critical acclaim will grow stronger and stronger as the series moves swiftly toward its completion, scheduled for late in the year 2001.

As more and more accounts are published, I am deeply impressed at the frequency with which I either consult a *BNA* account directly or advise others to do so in pursuit of facts about birds. Equally important, the usefulness of *BNA* transcends professional science. Every one of us who ever wrote a term paper about a bird can appreciate the immense value of having all the information about every bird summarized in a readable format, in one place, in our schools' libraries. Indeed, as the project nears completion its sales are increasingly driven by the recognition that all serious libraries, including municipal public libraries, should own it. I also have no doubt that the *BNA* first edition (limited to about 2,200 subscriptions) will become a valuable collector's item for private libraries over the next century.

Lab of Ornithology Becomes a Partner

I am thrilled and proud to announce that the Cornell Laboratory of Ornithology became a co-owner and partner in the production of *BNA*, effective on Valentine's Day 1998. From

Each species account (far left) opens with one or more attractive color photographs of the bird being covered and a range map, followed by detailed information on plumage, distribution, habitat, food, life span, population status, evolutionary relationships, migration, vocalizations, conservation, and much more. These accounts are prepared almost exclusively by professional ornithologists, each of whom is a recognized expert on the species being presented.

Why does the Black-capped Chickadee (above) start whistling its distinctive two-note fee-bee *song each year as breeding season approaches? Why does an Anhinga (at right) have a dazzling, sky-blue patch of bare skin around its eye at certain times of the year?* The Birds of North America *is a great place to begin (and sometimes end) your research on interesting bird features and behaviors.*

the beginning of the project, the AOU has wished to partner with a like-minded institution that could help shoulder the responsibility of managing and financing such an ambitious enterprise. For five years, the Academy of Natural Sciences of Philadelphia filled this role admirably, providing at little cost a home base of operations, full accounting services, and its extensive library and professional resources. In 1997, however, the Academy determined that it could not continue this commitment, especially at a time when some risk capital was now required to keep the project funded. We at the Lab of Ornithology—recognizing both the long-term importance of the project and its close relationship to our mission at the Lab—offered to take the Academy's place as a partner with the AOU. All parties agreed that *BNA* should be separately incorporated as an independent, charitable entity, and documents creating this entity were signed this February. The Academy withdrew from the project, and the Lab of Ornithology became a junior partner in the management and funding of BNA. The AOU retains majority ownership and has made a substantial loan commitment to ensure that the project will not falter prior to completion for lack of adequate funds.

As *BNA* proceeds toward completion, we marvel at its pace as well as its success. It took John James Audubon and his many associates 13 years to complete the 435 folio-sized paintings for which he is best known. It took Bent and his associates nearly 60 years to assemble this century's monumental series of life histories. Drawing its fire from the energy and enthusiasm of hundreds of committed specialists and a small but devoted staff, *BNA* will shepherd 720 comprehensive life-history accounts to completion in just 10 years. The first edition will span almost seven feet on a library shelf. It will also span a century of ornithological research and thus will be the definitive biographical resource in North American ornithology for a century to come.

Incidentally, the *BNA* account for Black-capped Chickadee, completed by Susan M. Smith in 1993, describes the *fee-bee* whistle as given mostly by males and most commonly in the spring and early summer. It serves "to lead flocks . . . to advertise territories and repel rivals . . . and in individual recognition." The *BNA* account for Anhinga is not yet published. I can't wait to see what it says about the blue around the bird's eye. ■

John W. Fitzpatrick is the Louis Agassiz Fuertes director of the Cornell Laboratory of Ornithology.

TOP: TOM VEZO. BOTTOM: ARTHUR MORRIS/BIRDS AS ART.

WOOD DUCKS BY JOE McDONALD

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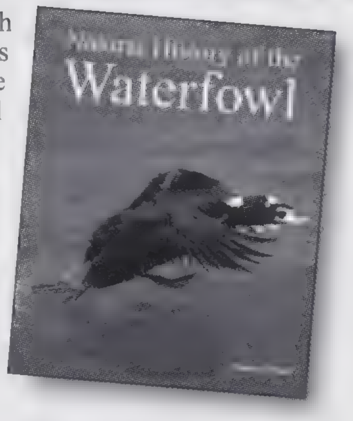

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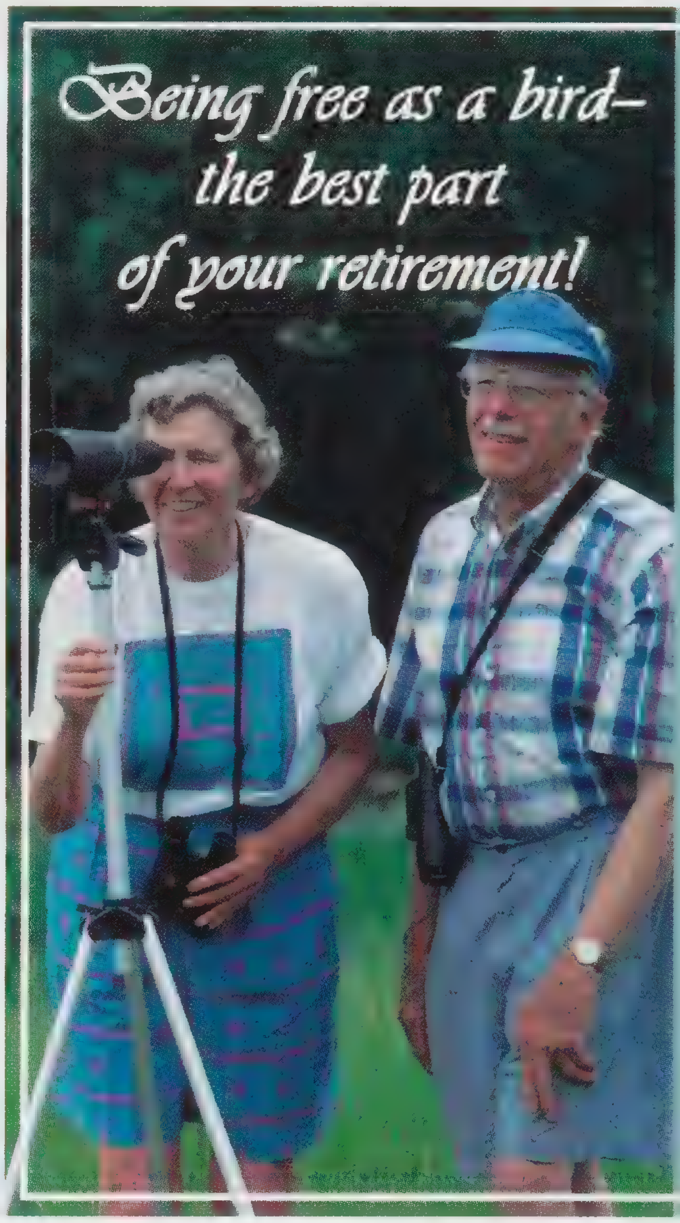

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ROCK STEADY

Text and photographs by Tim Gallagher

Hints on choosing and using a tripod

One thing I discovered a long time ago as a bird photographer is that, whenever possible, you should definitely use a tripod to support your camera and lens. I learned this the hard way by shooting a lot of bird pictures that were almost—but not quite—great shots. The subjects were interesting, the composition was effective, the color saturation couldn't be better, but when I closely scrutinized my transparencies with an 8x loupe, I could see that they lacked the critical tack sharpness that magazine and book publishers require in the photographs they buy. Don't get me wrong: some of the photographs were excellent, very salable shots, but, to me, my percentage of keepers was disappointingly low.

My problem was clear. In the interest of being as quick and mobile as possible in the field, I had sacrificed sharpness—one of the most important qualities of all in a wildlife picture. All too often, I had carried only a rifle-stock camera mount, a monopod, a beanbag, or a lightweight, flimsy tripod and had expected it to do the job of supporting a 400mm or larger telephoto lens with no vibration. These are poor substitutes for a substantial, rock-steady tripod and should, I now believe, only be used in circumstances in which it's impossible to use anything better. And you'd be surprised how quickly you can get used to carrying around the weight of a good tripod in the field. It's just a matter of learning to balance it properly across your shoulder.

Of course, there are tripods and there are tripods. Some are so rickety that you could hold your camera just as steadily without them. So this is one item of equipment that you shouldn't skimp on. Though dozens of tripods are available on the market, it's a good idea to stick with a proven brand. A couple of tripod companies that stand out are Gitzo and Bogen. Both are European-made—Gitzo in France and Bogen in Italy (where it's made by Manifrotto). I would rate Gitzo as the finest tripod available, which is why they're used by so many top nature photographers. I'm currently using a Gitzo 340 tripod, and I'm very happy with it. It provides quite adequate support for my 500mm f/4 lens, which is the one I use most often. But if I were shooting with a 600mm or 800mm or larger lens, I would opt for the larger Gitzo 410 tripod.

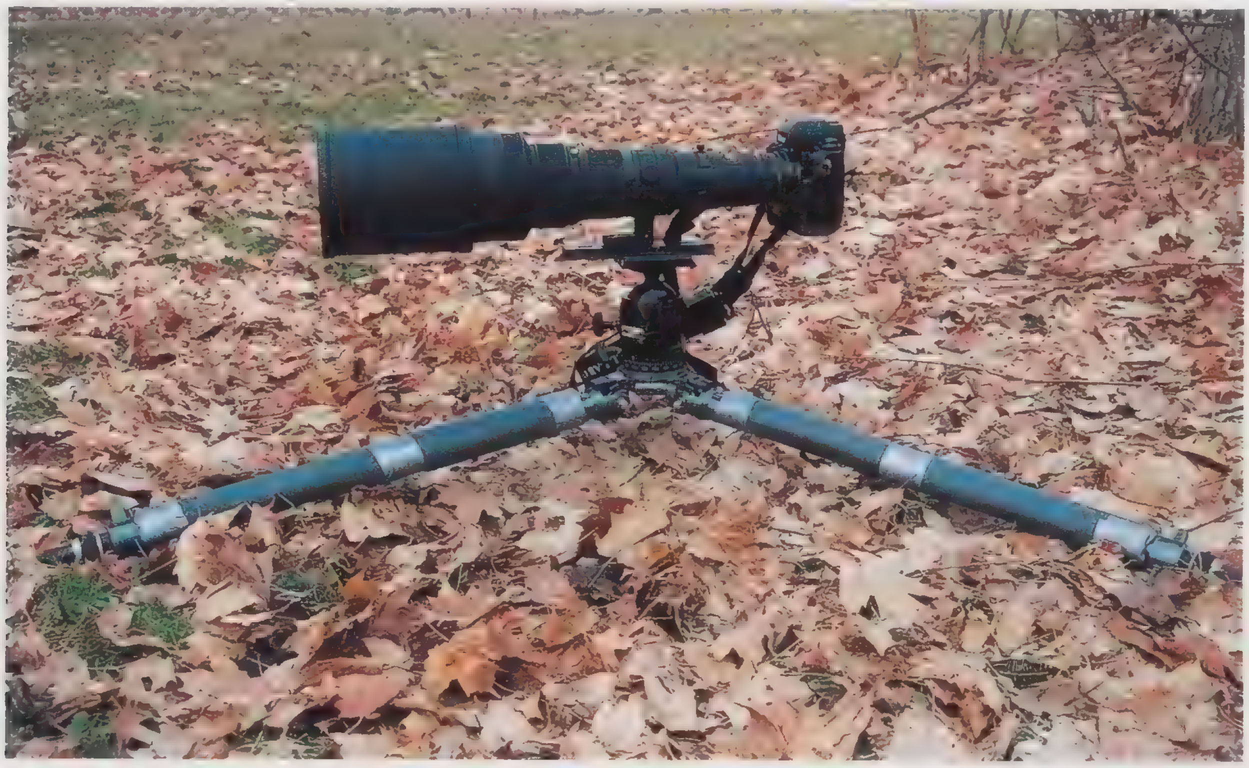
When I bought my tripod, I ordered one with just a flat plate at the top instead of an adjustable center column, which saved me some money

This close-up portrait of a Sandhill Crane—which was taken on a dull, overcast morning in Florida—required a slow shutterspeed (1/30th of a second) to achieve a proper exposure. Without an absolutely steady tripod, this image would certainly have been noticeably blurred by camera movement.

and was better for my particular needs. (And besides, I knew I could always add an adjustable column later if necessary.) My tripod extends high enough for me without using a center column, and it will hold my equipment more steadily attached at the top of the three tripod legs—the firmest point of support—than it would if my camera were on a raised, potentially less firm single column. In addition, not having a center column allows me to spread my tripod legs out wide and get my camera down virtually to ground level. I love photographing shorebirds and waterfowl from a low, eye-to-eye perspective like that.

Less-expensive alternatives to the Gitzo product line are the Bogen tripods. They're not quite in the same league as Gitzo in terms of quality and durability, but they are good photographic tools. I've owned a Bogen 3021 tripod for years, and I still use it from time to time when I need to travel light. One difference between these tripods—besides price—is that Gitzos have knurled, screw-type legs, whereas Bogens have flip-lock legs. It's worth trying out both at a store to see which you prefer. If you do buy a Bogen, opt for one that has a black, anodized finish; otherwise, the glare of the sun on the polished metal could frighten birds.

As for what kind of tripod head to use, a ball head is definitely the way to go for bird photography. These useful heads, which function somewhat like a human hip joint, enable photographers to follow a moving subject quickly, in almost any direction, without having to fiddle with several different tripod adjustments. In most models, turning one lever or knob locks or releases the ball joint in one easy motion. Years ago, I sometimes used a standard pan-tilt head with a panning arm instead of a ball head. It provided solid support, and it wasn't bad for certain kinds of flight photography—for example, when a large, lumbering flyer, such as a Brown Pelican, came cruising past on a level plane. But for most situations with birds you need the quickness that a ball head affords. This kind of head is also pretty good in most panning situations, because many of the better ball heads have a separate adjusting knob that will release the base of the head, allowing you to pan in a horizontal axis, even when the ball joint is locked.


This Gitzo 340 tripod with a Foba Superball head is an excellent set-up for lenses up to 500mm. Because the tripod pictured does not have an adjustable center column, the legs can be spread wide, allowing you to get your camera down virtually to ground level—eye-to-eye with many birds.

I now use a Swiss-made Foba Superball head, which has been extremely useful in the field. It has a convenient handle that allows me to adjust the tension on the ball so that I can move my camera slightly when I follow a bird, and then stop and take the picture without having the camera slip. And when I turn the handle snugly on the head, the lens is locked into position like it's in a vice, immovable and safe. If I use a shutter release cable and don't touch the tripod at all, I can virtually eliminate any chance of camera movement. Of course, the bird might turn its head or move its body suddenly, but there's nothing you can do about that. I find with many birds, however, the noise of the camera shutter startles them for an instant, and they stand up straight and freeze momentarily. This is great time to snap a few more pictures. And if your camera is locked on a good tripod, steady as a rock, you're sure to have some tack-sharp pictures. For convenience, I purchased a quick-release attachment with my Foba, which allows me to switch lenses and cameras easily. Excellent ball heads are also available from Kirk Enterprises, Arca-Swiss, Graf, Linhof, Bogen, and other companies.

To minimize the pain of carrying a heavy tripod, camera, and lens around on my shoulder all day, I put high-density foam insulation around the upper legs of my tripod—the same kind of insulation that people wrap around the pipes in their basements to protect them from winter temperatures. I cut the insulation and install it on the top section of each tripod leg, wrapping it securely with duct tape. (You can also buy commercially available tripod pads, which look prettier but don't do the job any better.) The foam makes a nice cushion for your shoulder as you carry the tripod. When I'm walking along, supporting my camera, telephoto lens, and tripod on my shoulder, it only takes a few seconds to swing it around, set it up, and start taking pictures.

In the search for the ultimate in stability, some photographers go so far as to use two tripods—one attached to the camera and the other to the lens—but good luck trying to follow a bird if you use this clumsy arrangement. If you get a good-quality, rugged, dependable tripod and head, and you learn to use them effectively, that should be all you need to improve the sharpness of your photographs noticeably. ■

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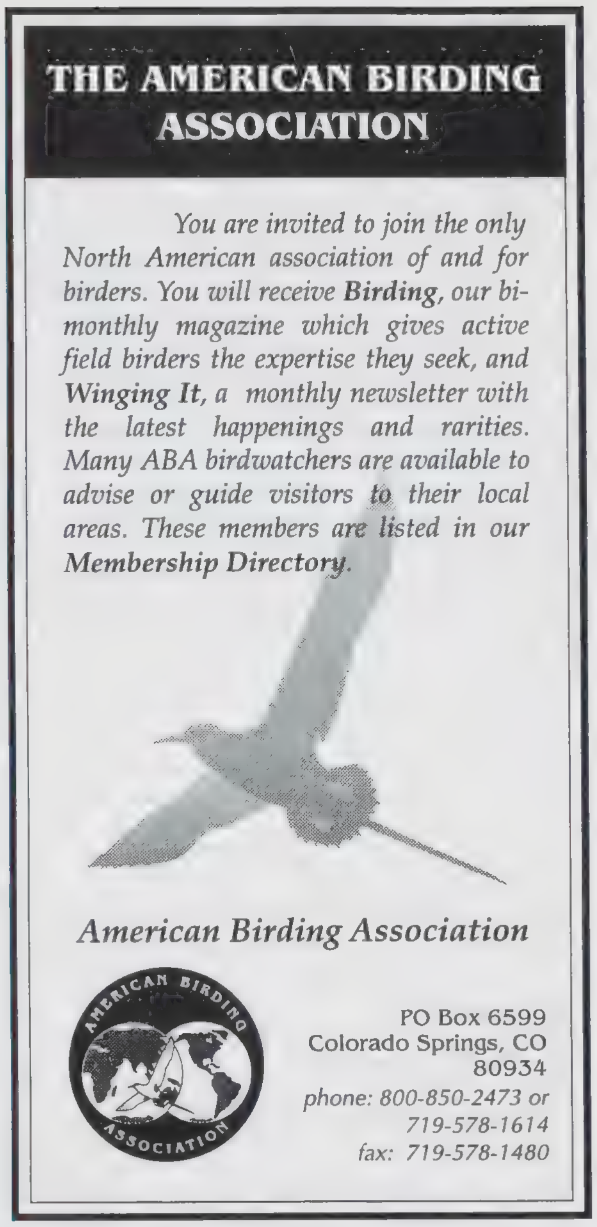

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STUFF ENOUGH?

By Pete Dunne

When I was seven I owned a pair of 6x binoculars and a bird book that fit into my hip pocket with room to spare. I'd get home from school. Shed slacks. Don jeans. Grab bins. Pocket the book. Spring out the back door and start looking at birds.

It was a blast.

I just finished packing for a trip to Arizona and darn near had a nervous breakdown sorting through all the bird-finding stuff I've accumulated; trying to decide . . . Should I pack the 10x binoculars to cut the distance on those wide-open western spaces or a close-focusing 7x for birding in those canyon confines?

I opted for the 10x, changed my mind and selected the 7x, then reconsidered and switched to a good, versatile 8x instead. Then I threw the 7x in, too (in case my primary glass went down and I needed a backup).

Why not the 10x? Because, I reasoned, a spotting scope would provide the extra magnification I'd need. But which scope? The 60mm was more compact and a better traveler but the 78mm was the better performer. If I chose the 78mm, it would be prudent to bring the 20-60x zoom eyepiece because the fixed 30x eyepiece becomes a functional 38x when mated to the larger objective lens, and this would mean having to bring the larger, more stable tripod instead of the one that fits in my travel bag.

Of course this would also mean having to include a scope carrying pack, because the magnum scope/mega tripod package is too heavy to sling over your shoulder and tote all day.

I re-reconsidered just bringing the 10x binoculars and forgetting the scope but ended up taking the magnum scope/mega tripod *and* the 10x binoculars (reasoning that if the scope got too heavy, I could leave it in the car and fall back on the bins).

Oh, yeah, I packed the zoom eyepiece, too.

"It's small," I concluded.

ILLUSTRATION BY JEFF SIPPLE

After great debate, I chose only two regional bird-finding guides from my library, plus two general field guides (one had better hummingbird illustrations and the other was better on flycatchers), specialty guides for hawks, warblers, sparrows, and, after a short debate, Peter Grant's *Gulls.*

"Gulls wander," I reasoned. "You just never know."

I felt so good about keeping my arsenal of books trim that I splurged and threw in two field guides to the birds of Mexico, two guides specializing in the separation of closely allied species, plus guides to wildflowers, butterflies, geology, herps, mammals, insects, and meteorology.

After a short debate, I pulled out the meteorology book and packed a weather band radio instead.

"Let the experts do their job," I concluded.

Of course, clothing represented a challenge. All those elevation changes; all those temperature swings. Being a veteran traveler, I used the old layer system, packing everything I own in layers starting with the heavy wool stuff at the bottom of the bag, leaving the light, lofty, tech-weenie stuff for the top.

I limited myself to one pair of light hiking boots, two pairs of running shoes, wellies, and two rain parka/pant combinations (in case one got wet).

"Just no accounting for that El Niño," I reasoned.

Incidentals included two bird vocalization cassette sets (one had better variety, the other better nocturnals), a 100,000-candle-power flashlight, two water bottles, and a portable planetarium. Then I packed the camping gear. I planned on staying out one night . . . maybe two.

So, after everything that was defensibly essential was packed and everything that was indefensibly expendable expended, I was left with more birding-related stuff than Columbus could have carted in three ships bound for the New World.

What I want to know is when am I going to have enough stuff to enjoy birding as much as I did when I was seven years old and just ran into the woods with a pair of 6x binoculars?

Which kind of makes you wonder why nobody is marketing a good 6x glass anymore. Boy I'd love to have a pair of those babies for backyard birding. ■

TOM VEZO

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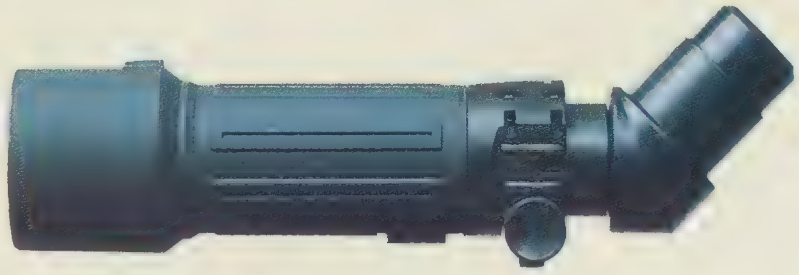

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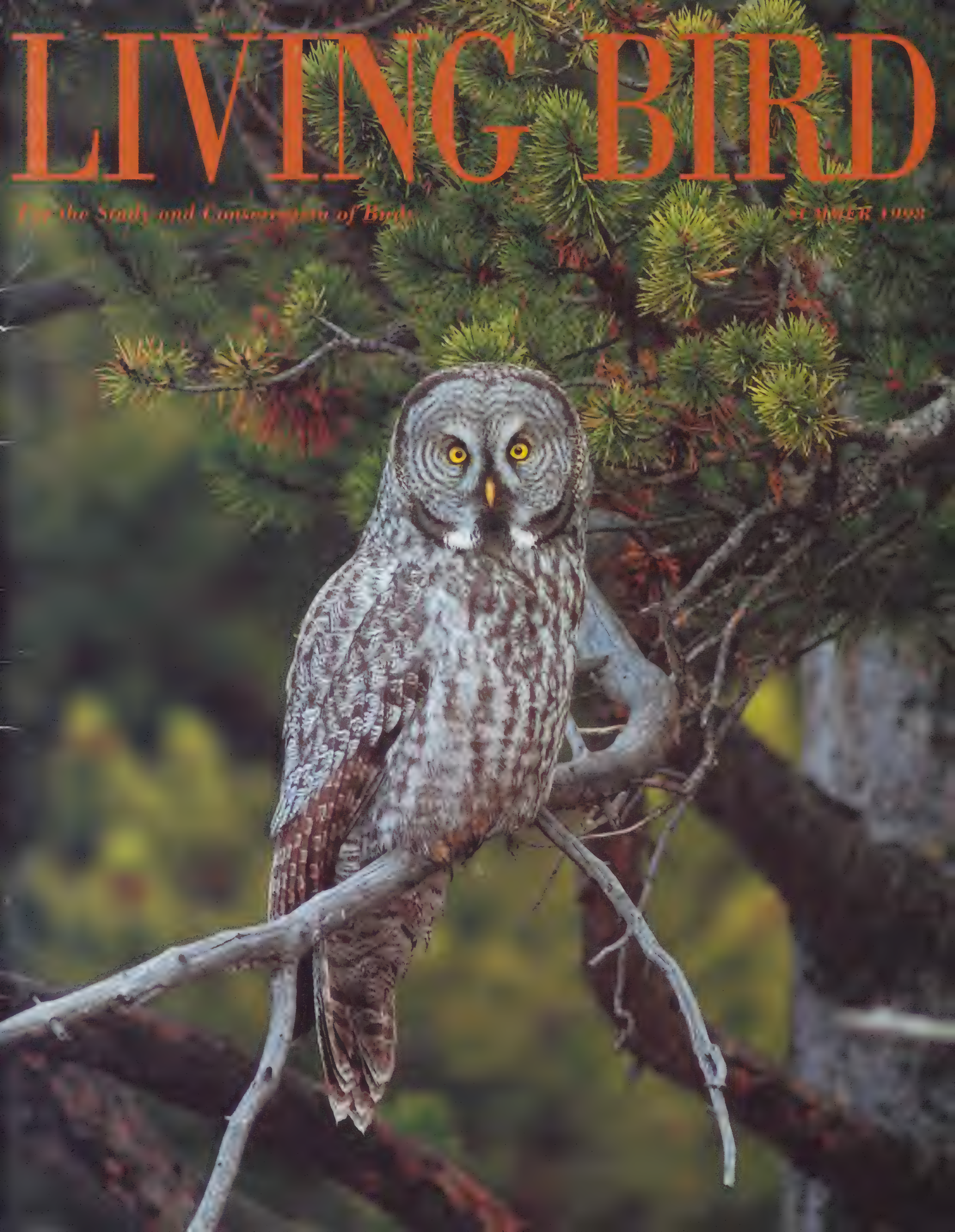

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GREETINGS FROM SAPSUCKER WOODS

Considering all the gloom-and-doom stories you get every day on the radio and television, it's nice to hear something hopeful once in a while—especially if it relates to birds or the environment. You'll find one such article in this issue, and it's about an unlikely place: the vast harbor servicing New York City and adjacent areas. Pretty polluted, right? Virtually an open cesspool?

Wrong. Since the U.S. Clean Water Act of 1972 was passed, the New York/New Jersey harbor has undergone a phenomenal change—especially in the last 15 years. Now the many small islands, which were once nearly devoid of wading birds, host thriving colonies of herons, egrets, night-herons, ibises, and more. Though much of the refuse remains—the rusting steel-hull boats, the crumbling buildings of brick and concrete, and the ubiquitous garbage—the reinvigorated wetlands lacing through the harbor area now sustain a healthy population of these beautiful long-legged waders.

Author and biologist Paul Kerlinger, who surveys the wading bird populations in the harbor each spring, wrote a fascinating article about this amazing, born-again ecosystem, which appears on page 10 of this issue, along with some stunning pictures of the area by ace nature photographer Tom Vezo.

Although New York/New Jersey harbor is not the kind of place many of us would like to visit on a birding vacation anytime soon, it's great to know that this once completely despoiled area is now providing vital habitat for a wide range of birds.

— *Tim Gallagher*
Editor-in-Chief

Cover: Measuring up to 27 inches in length, the Great Gray Owl is the largest North American owl. Though primarily a resident of the vast boreal forests of Canada and Alaska, the species also breeds in some of the high mountains of the Lower 48 states. Nature photographer Arthur Morris took this intimate portrait at Yellowstone National Park.

Right: A Great Egret carries a stick to its nest on an island in the New York/New Jersey harbor—one of the most industrialized places in the world. Thanks to long-term cleanup efforts begun in the 1970s, this area now hosts a thriving population of wading birds. See article on page 10. Photograph by Tom Vezo.

Back Cover: Looking uncharacteristically gawky, a Great Blue Heron wades in the surf at Captiva Island, Florida. Photograph by Arthur Morris/Birds as Art.

10 EGRETS AND OIL TANKS *by Paul Kerlinger*
Improved sewage treatment and reduced pollution are making the islands of New York/New Jersey harbor a haven for wading birds.

18 TAKE YOUR CHILDREN BIRDING *by Michelle Alten*
Teaching youngsters about birds enriches their lives and helps create future conservationists.

24 RUNNING AWAY FROM HOME—AT BIRTH
by Darryl Jones
Young megapodes are the most precocious of birds, but can they survive in the modern world?

30 SNOWBIRDS? *by Paul Zimmerman*
Phainopeplas descend on the Southwest each winter—not to escape blustery weather but to feed their craving for mistletoe berries.

Departments

4 LETTERS

5 BIRDNEWS

Columns

6 FLYING FIELD *by Mel White*
Warbler Days

36 IN THE FIELD *by Jack Connor*
Why Fork-tailed Means Friendly

38 THE CATBIRD SEAT *by Pete Dunne*
Side Benefits

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Letters

A TALE OF THREE DAVIDS

I just perused the Autumn 1997 issue of *Living Bird* and noticed David Wilcove's column on the Bristle-thighed Curlew ("A Tale of Two Curlews"). I am a real amateur on birds; however, I certainly have heard of the Bristle-thighed Curlew. The first time was when a couple of us local Cornell students were quenching our thirst at the former Ithaca Hotel one warm day in June of 1948. I remember that day very well. Another colleague joined us carrying *The New York Times* and saying, "Look at this!" The headline read in big letters, "Nest of Bristle-thighed Curlew Found," and below it was a picture of our friend David G. Allen kneeling beside the well-camouflaged nest. David had discovered the nest of the Bristle-thighed Curlew! I was therefore surprised to read in Wilcove's column that "a nest of the species was not discovered until June 12, 1948, when Henry Kyllingstad and his young son found one, after four years of searching, making this species one of the last North American birds to have its nest described." Now, who really discovered the bird's nest first?

John L. Hyde
Ithaca, New York

*In my recent article on the conservation of Bristle-thighed Curlews (*World Birdwatch *18(2):20-21, 1996), I mistakenly attributed the discovery of the first Bristle-thighed Curlew nest to "Henry Kyllingstad and his young son . . ." Indeed, the first Bristle-thighed Curlew nest known to science was co-discovered by David Allen (son of esteemed ornithologist Arthur Allen) and Henry Kyllingstad on 12 June 1948. To my knowledge, prior to this discovery the Bristle-thighed Curlew was the only breeding bird in North America whose nest and eggs were unknown to science.*

Previously, Henry Kyllingstad and his son, David, had searched in vain for Bristle-thighed Curlew nests in this same region of Alaska. The third David enters the story in the form of my friend David Wilcove, whose article in the Autumn 1997 issue of Living Bird *relied in part on information from my* World Birdwatch *article. Sadly, David perpetuated my original error, which I had discovered soon after my article appeared. So, I made two errors: (1) confusing David Allen with David Kyllingstad, and (2) failing to correct error number 1! David Wilcove is guilty only of trusting the words of a scientist who normally would not make a mistake such as I did.*

Jeff Marks
Managing Editor
The Auk

CREDIT WHERE CREDIT IS DUE

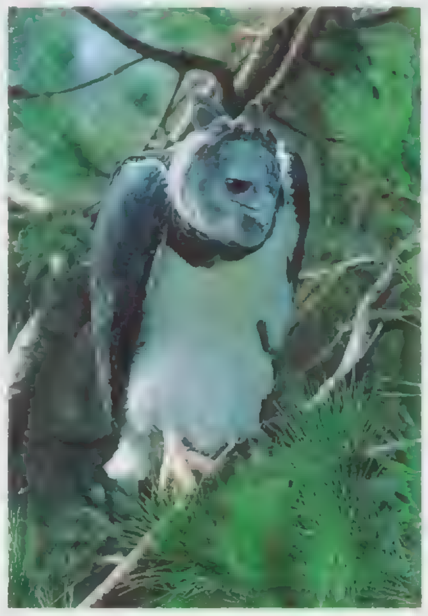
I enjoyed reading Kristi Streiffert's article, "Birding and Ecotourism," in the Winter 1998 issue of *Living Bird.* It is vitally important to promote the economic value of wildlife sites to local communities as one way to help preserve those sites. I feel, however, that the pioneers in the field of "birding economics," especially Ted Eubanks, Paul Kerlinger, and Richard Payne, should have been recognized in the article. Indeed, it was Ted Eubanks who negotiated the purchase of High Island, Texas, to ensure its continued survival. Without the foresight of people like Eubanks, Kerlinger, and Payne, we may not have many of the facilities for traveling birders, such as the Great Texas Coastal Birding Trail referred to in Streiffert's article, which was conceptualized and implemented by Ted Eubanks and Madge Lindsay. Let's give credit where credit is clearly due.

Paul Green
Director of Conservation and Education
American Birding Association

We welcome letters from readers. Write to The Editors, *Living Bird,* 159 Sapsucker Woods Road, Ithaca, New York 14850, or send e-mail to <livingbird@cornell.edu>.

Home-grown Harpies

This past May, The Peregrine Fund released a captive-bred Harpy Eagle in the rainforests of Panama. The six-month-old male, which was hatched at the San Diego Zoo the previous October, was released into an area of dense tropical forest near Panama City, where the birds once flourished. This was a special event for the people of Panama, because the Harpy Eagle is the country's national bird. Researchers believe that the species' population began to decline after the Panama Canal was built in 1914. Today only a few known pairs breed in the entire country.



RON GARRISON/COURTESY ZOOLOGICAL SOCIETY OF SAN DIEGO

This is the third captive-bred Harpy Eagle released so far this year. Researchers at the San Diego Zoo hand-raised the bird, although it never saw its caretakers. Hatched on October 26, 1997, the bird was fed every meal using a Harpy Eagle hand puppet so it would not become accustomed to humans.

"It's an exceptional species," says William Burnham, president of The Peregrine Fund. "We have been working toward the goal of releasing young Harpy Eagles since we started the project in 1989. These first releases are an experiment, and we hope we can return the species to areas where it formerly existed."

Two facilities in the United States are breeding Harpy Eagles: the San Diego Zoo in California and The Peregrine Fund's World Center for Birds of Prey in Boise, Idaho. The two conservation organizations are collaborating on a number of reintroduction projects with endangered birds, including the California Condor, Harpy Eagle, and San Clemente Loggerhead Shrike.

The San Diego-raised bird joins two other captive-born Harpy Eagles in Panama's lush Soberina National Park. The young harpy pair, hatched at the World Center for Birds of Prey, was released earlier this year. This was the world's first attempt to reintroduce captive-produced Harpy Eagles into the wild. A fourth chick, hatched at the San Diego Zoo this past January, will be released later this summer, creating two new pairs of Harpy Eagles in Panama.

"It's incredibly rewarding to see a bird raised in San Diego being released in the rainforests of Panama," says David Rimlinger, curator of birds at the San Diego Zoo. "Many of us put in a lot of effort to get to this point."

Although hatching and raising these endangered eagles in the United States and transporting them to Panama was a massive undertaking, it's only part of a long-term conservation program for the species. Biologists living near the release site monitor the birds daily. Harpy Eagle chicks are dependent on their parents for more than two years, so biologists have to fill the role of the released birds' parents until they mature enough to take care of themselves. Radio transmitters allow scientists to track the birds as they travel through dense forests. Until the birds learn to hunt on their own, the researchers must place food high in the forest canopy, where the eagles live.

Human activities such as deforestation and poaching have virtually eliminated the Harpy Eagle from large regions of Central America. The bird is a flagship species for conservation of the diverse wildlife of the area's rainforests. With a slow reproductive rate and large home range, the Harpy Eagle is one of the first species to feel the impact of encroaching civilization.

The Harpy Eagle reintroduction program is a cooperative conservation effort between The Peregrine Fund and the San Diego Zoo in the United States and INRENARE, the natural resource agency of Panama. Officials at INRENARE oversee Panama's national park system and develop education and conservation programs throughout the country.

Originally headquartered at the Cornell Lab of Ornithology, The Peregrine Fund was founded in 1970 in response to the catastrophic decline of the Peregrine Falcon population throughout much of North America. The efforts to save this species resulted in breakthroughs in the field of endangered species research. In addition to the Peregrine Falcon and Harpy Eagle, The Peregrine Fund is involved with conservation programs around the world with species such as the Philippine Eagle, Aplomado Falcon, California Condor, Mauritius Kestrel, Orange-breasted Falcon, several endangered Hawaiian forest songbirds, and other species.

And the Winner Is . . .

Living Bird and its staff recently won a number of national awards. The magazine picked up a bronze medal in the prestigious annual award program sponsored by the Council for the Advancement and Support of Education. Our staff also won some major awards in this year's Outdoor Writers Association of America competition. Associate editor Leslie Intemann earned second place in the "Take Pride in America" category for her article, "Into the Woods," which appeared in the Autumn 1997 issue. For his article, "Birding at the Edge of the Arctic," which appeared in the same issue, editor-in-chief Tim Gallagher won first place for "Best Outdoor Travel Article." He also took first place for "Best Natural History Photograph" and first place for "Best Conservation/Environment Photograph" for two pictures published with the article.

WARBLER DAYS

by Mel White

In the spring, a young birder's fancy lightly turns to thoughts of . . . warblers?

It was with a happy heart that I left my neighborhood bookstore not long ago with a copy of the new Peterson *Warblers* guide, by Jon Dunn and Kimball Garrett. I liked the heft of the book as soon as I took it off the shelf; it's small but heavy, like a pair of Leicas, which seems to promise complex, sturdy, and trustworthy mechanisms inside.

The guide has both illustrations and photographs for identification, a pleasing feature that complements the remarkable detail in the species accounts. No matter how valuable the exactitude of photographs is, I don't much like guides that rely on them alone. Something in me dislikes the inevitable element of chance in their creation. I prefer to think of someone in a studio sweating out each feather edge and bill shape, making a conscious decision about what to emphasize. These people are, after all, supposed to be leading me to the truth, and as a writer I probably think of that quality as more subjective than some might.

I put the book in the case alongside *Warblers of the Americas* from a few years back. I like it, too, though I have to admit I bought it entirely for aesthetic reasons. I have no idea how technically accurate the illustrations are, but they're fun to look at. With the book's large format, some of the birds, such as the Russet-crowned Warbler of South America and our own Northern Parula, seem poised to hop right off the page.

Beyond its utility and attractiveness, there was another reason *Warblers* was so welcome: it was heartening to think that such top-level birders and publishers had devoted so much time and attention to a family that many people think of as avian eye candy.

There's a whiff of the dilettante in admitting to being a big warbler fan. It's rather like saying you enjoy Vivaldi or Renoir. Any slow learner off the street will immediately take to *The Four Seasons* or jolly French peasants, but sooner or later we're supposed to progress to Alban Berg and Mark Rothko; similarly, we're supposed to move beyond oohing over Magnolia Warblers to studying shorebird tertials and *Empidonax* primary extension—at least as our most-favored birding pursuit. At least, that we admit to.

I realize these facets of birding aren't mutually exclusive. Plenty of people enjoy both the beauty of warblers and the challenge of, say, standing in a garbage dump and scrutinizing immature gulls. But, for me, *Warblers* will help provide cover for those times when I'm around serious types: statistics, references, the jargon of the cognoscenti.

Just about the time the first Louisiana Waterthrushes and Black-and-white Warblers were arriving this spring, I went to the library and brought home a small armload of literature on warblers, from Frank Chapman's 1917 book to Douglass H. Morse's 1989 *American Warblers: An Ecological and Behavioral Perspective.* In working my way through the stack, I saw how our view of these birds has changed, from admiring them as pretty butterflies and fragile waifs to investigating them as environmental measuring devices and evidence of Ice Age speciation.

Reading Morse's book, I was chagrined, though of course not really surprised, to discover the depth of my ignorance about warblers. Take, for example, the two main songs of the Black-throated Green Warbler: *bees, bees, in the trees* and *biz biz biz buzz beez.* If I thought about it at all, I suppose I figured that sometimes they just felt like singing one and sometimes the other, the way sometimes we feel like hearing "I've Got a Crush on You" and other times "Falling in Love Again." But nature doesn't do a lot of just-feel-like-it, and it turns out the choice of accented- or unaccented-ending songs depends on whether the singer is foraging, whether a female is near, and other quantifiable factors.

I had, in the past, considered how some of the duller warblers—Ovenbird, the waterthrushes, Swainson's—sing the loudest, lowest-pitched, and most distinct songs, but I hadn't really thought about the species' preferred elevations. Higher-pitched songs, such as those of the treetop Blackburnian Warbler and Northern Parula, don't carry well in thick understory vegetation, while lower tones cut through the brush better. Once again, there is reason behind the whistled rhymes.

And all that gorgeous plumage, the yellows and oranges and blues and blacks that fill us with poetic notions? "It would be naive to pass off the riot of warbler color patterns as merely a random assemblage," Morse writes.

Naive? Me? Well, I don't believe I ever used the precise word "random."

If you want poetry, you need to crank the clock back a few decades, when writers of species accounts depended to a large degree on anecdotal evidence from observers scattered around the country; people with names like Egbert Bagg, Edward von Siebold Dingle, Miss Cordelia J. Stanwood, and Winsor Marret Tyler.

ARTHUR MORRIS/BIRDS AS ART

"My infatuation with the Northern Parula lasted only until I saw my first Hooded Warbler—a bird that has remained my favorite ever since one appeared in a dark bottomland forest . . . ."

Those were the days when Miss I. M. Paddock took time to notate songs on a musical staff, with crescendo marks and *presto* or *allegro vivace* when appropriate, and no doubt assumed that a goodly portion of her readers could interpret them as a matter of course.

The days when Chapman wrote of the evocative nature of listening to a warbler song, when "the sweetness and promise of spring seems stored in Parula's little sizzling gurgle; there is good cheer and sunshine in Yellow Warbler's simple lay; peace and rest in the quaint *zee*ing of the Black-throated Green."

The American Redstart, he says, moves in "a mad series of darts and dives and whirls, of onward rushes and sudden stops. . . . With what dainty grace he spreads his tail, half opens his wings, and pirouettes from limb to limb like a village belle with coquettishly held skirts tripping the mazes of a country dance!" Well, yes!

I'd like to have met P. A. Taverner, who described the song of the Yellow-breasted Chat: "His love-song is a woodland idyl . . . his whole being tense and spasmodic with ecstasy. As he rises he pours forth a flood of musical gurgles and whistles that drop from him in silvery cascades to the ground, like sounds of fairy chimes." Spasmodic with ecstasy! Performing for a female with heaving bosom and fluttering heart, no doubt.

Every warbler watcher knows the experience related by one S. Harmsted Chubb regarding the Cerulean Warbler: "His life seemed to be confined almost entirely to the tops of the tallest deciduous trees, where he would generally feed, with apparent design, on the side most remote from the would-be observer. . . ."

The old warbler books are full of sociological artifacts, from the note that the "Calaveras" (Nashville) Warbler is "restless, shy, and very difficult to shoot" to a report of a Bachman's Warbler being mounted as a hat decoration in 1886. The legendary and prickly Ludlow Griscom asserts that becoming a warbler expert "is completely beyond the natural capacity of most individuals," adding that the "lack of factual memory seems to be the principal weakness of many women birders." (I'll bet some of them didn't forget *that* remark.)

As counterpoint to all of the sentimental writing inspired by warblers, Griscom says of the Cerulean that people "have expatiated at some length on its alleged beauty and attractive markings. Actually most of this is not true," and dismisses the Palm as a "dull and relatively uninteresting warbler." So there.

March turns to April, and a Nashville Warbler appears outside my office window, a new bird for my yard list. It seems a good omen for the season. All of these books with their affectionate descriptions of waifs and fairies and sprites, or even their dispassionate studies of warblers as feathered eating machines, have me ready for migration to shift into top gear.

While it was, of all things, a White-throated Sparrow that turned me into a bird watcher, for the first year my interest was in the nature of an

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intellectual exercise—something between a game and a science project. In the second spring, a couple of experienced friends took me into a wet woods on the edge of town and patiently and uncondescendingly showed me that the beautiful birds on the warbler pages of my Peterson guide were not unattainable rarities found only in far-off Canadian forests or Appalachian mountains but, indeed, practically infested the treetops for a few weeks in spring. Immediately, I was, in the words of Griscom, "embarked on an almost never-ending adventure."

They say you never get over your first love, but I did. Northern Parula was the first warbler that my friends showed me and so came to represent all its colorful clan in my imagination. But my infatuation lasted only until I saw my first Hooded Warbler—a bird that has remained my favorite ever since it appeared in a dark bottomland forest, looking like . . . But you've all admired it, too, and, unless you have a soul like an electronic calculator, you can fill in your own simile here.

Despite having seen some wonderful birds in exotic places around the globe, I still believe there's no thrill quite like starting down a trail on a spring morning right here at home and realizing that the birds and the weather have cooperated to bring one of those days—one of those warbler days that we anticipate all winter long, when a single big oak tree can keep us busy for half an hour, bits of color glimmering above as if a small rainbow had collapsed and scattered fragments through the new green foliage.

So, inspired by warbler guides and armed with fresh ID tips, I head for the woods again. And when there's a tree full of birds overhead, I can pretend with newfound confidence to be studying the long undertail coverts of a Bay-breasted or the cheek patch of a Pine. In fact, I'm only adoring the pretty pastel-cheeked French girls, all the while whistling the opening to "La Primavera": *dee DEE dee dee dee-dee-DEEE* . . . ■

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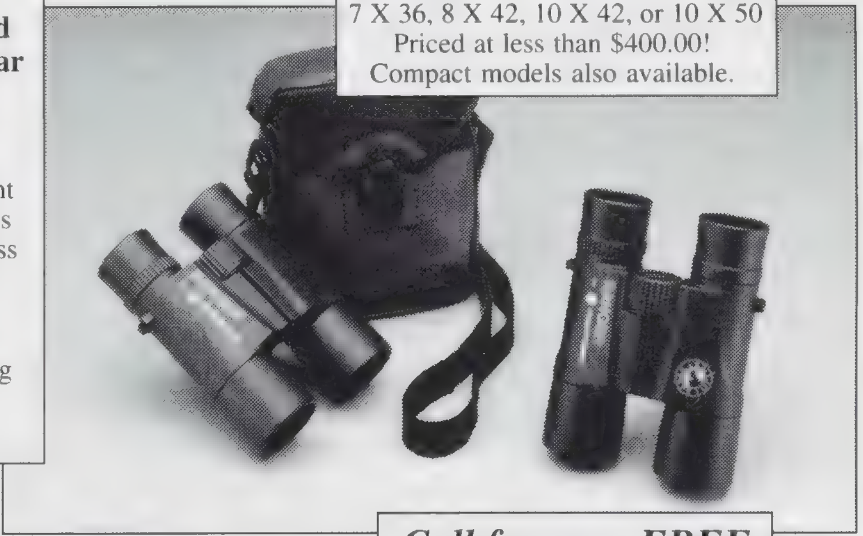

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TIM GALLAGHER

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AMERICAN WHITE PELICANS BY TIM GALLAGHER

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EGRETS AND OIL TANKS

Improved sewage treatment and reduced pollution are making the islands of New York/New Jersey harbor a haven for wading birds

BY PAUL KERLINGER
PHOTOGRAPHS BY TOM VEZO

Driving along the New Jersey Turnpike at 70 miles per hour near Newark, New Jersey, it's easy to pass by without looking at the white dots scattered here and there on the meadow and marshlands. After all, what could they be? Trash? Industrial waste? Bleach bottles? Plastic grocery bags? Certainly nothing worth giving a second look . . . or are they? The few drivers who slow down and look closely get a pleasant surprise: the white shapes are birds—Great, Snowy, and Cattle egrets. An even closer examination would reveal Glossy Ibises, night-herons, and other long-legged waders. That's right. Nestled among the refineries, warehouses, shipping terminals, derelict buildings and piers, and superhighways lies a wonderfully rich ecosystem, made up of remnant salt and brackish marshes, as well as some wetlands created as mitigation projects, and the birds are taking advantage of it.

Although it is hardly pristine wildlife habitat, the New York/New Jersey harbor area serves as an important foraging and nesting area for

What image comes to mind when you think of New York City's harbor? Vast shipping terminals? Refineries? Garbage? Pollution? An industrial wasteland? Hardly what you'd consider wildlife habitat—and yet, thanks to cleanup efforts begun in the 1970s, the wetlands, waterways, and islands of the New York/New Jersey harbor now host thriving colonies of wading birds, such as the Snowy Egret, at left.

Though the edges of the uninhabited harbor islands are often strewn with trash and flotsam, their interiors provide excellent nest sites, secluded from the nearby urban bustle. Above, Paul Kerlinger steps carefully through washed-up debris, searching for nests on Shooters Island.

egrets, herons, ibises, cormorants, and other birds. Despite the fact that this area is one of the most urban and industrialized places in the world, the colony of long-legged waders has expanded in the past few decades and is now a healthy and stable population.

The wetlands that lace the harbor provide foraging locations for the herons and egrets, but it's the dozen or so small, uninhabited islands that provide ideal settings for colonial nesting. Though their edges are strewn with trash and flotsam that moves in and out with the tides, their interiors are relatively removed from the bustle of urban life. The sounds and smells of industry are inescapable, but within the interior of these islands human activity is scarcely visible. As garbage barges, petroleum tankers, gravel boats, container ships, tugboats, and pleasure crafts cruise the waterways, the herons go about their business of nesting and raising young—oblivious to the activity near them.

The islands are located in the East River, Jamaica Bay, the Kill van Kull, the Arthur Kill, Raritan Bay, and Long Island Sound, and they may comprise fewer than 1,000 acres in total area. Like the rest of the harbor, the islands have seen their share of industrial and other human activity. Isle of Meadows and Prall's Island in the Arthur Kill are old dredge spoil, now covered by early successional forests. Shooters Island is now overgrown with a luxuriant vegetation of native and alien trees, shrubs, and vines that obscures the hulls of steel boats and brick and concrete buildings that remain from the shipbuilding days. North Brother Island also has brick buildings that are overgrown. The three-story sanitarium once housed Typhoid Mary, but now the same buildings host nesting gulls. Two of the islands are owned by the City of New York Parks and Recreation Department, one by the New York City Department of Sanitation, four by the National Park Service (Gateway National Recreation Area), and others by the City of New York. One is privately owned but is virtually undevelopable.

Shooters Island is overgrown with luxuriant vegetation of native and alien trees, shrubs, and vines that obscures the hulls of steel boats and brick buildings that remain from shipbuilding days.

Long abandoned by the shipbuilding industry, Shooters Island (above right) is now an overgrown tangle of bird-friendly vegetation. At right, a juvenile Yellow-crowned Night-Heron—physical evidence of the productivity of the harbor's nest colonies.

Together, the islands of the New York/New Jersey harbor support a summer population of long-legged waders that may exceed 4,000, making it one of the largest colonies in the Northeast. Black-crowned Night-Herons are the most common species, accounting for nearly two-thirds of all nesters. Great Egrets, Snowy Egrets, and Glossy Ibises are about equal in numbers, accounting for many of the remaining birds. Smaller numbers of nesting Green Herons, Cattle Egrets, Little Blue Herons, and Yellow-crowned Night-Herons are scattered about the harbor, even on some of the inhab-

Author Kerlinger surveys the nest colonies each spring. One of the best measures of success for the harbor's wading bird colonies is the number of young produced. Above, two newly hatched Black-crowned Night-Herons on New York's Isle of Meadows.

ited islands. Tricolored Herons are seen in and around the nesting areas, with only a few individuals attempting to nest. The Yellow-crowned Night-Heron and Little Blue Heron are listed as threatened species in New Jersey—which is somewhat ironic, because they are surviving in one of the most heavily developed areas in the world.

Entering the colonies to count nests, eggs, and young birds is an unforgettable sensory experience. On the Isle of Meadows—which contained some 800 heron, egret, and ibis nests in 1997—visitors first note the smell of garbage or chemical refineries. Standing between what may be the world's largest landfill (on Staten Island) and the petrochemical epicenter of New Jersey, you need only inhale to determine the wind direction. Within the colony, the gagging aroma of feces and dead animals is the predominate smell. On the ground lie broken eggshells, dead nestlings, an occasional uneaten fish, and the ever-present bits of trash. Nests with young and eggs are usually found in small gray birch and black cherry trees, mostly lower than 15 feet. None of the herons and egrets make substantial nests, instead building flimsy platforms of small sticks, which are so porous that you can sometimes count the eggs simply by looking up through the nest. Overhead, herons, egrets, gulls, and crows circle only a few feet above the trees. A cacophony of throaty squawks (Great Egrets), shriek-whistles (Green Herons), *glug-glug-glugs* (ibises), and crow and gull calls makes it difficult to concentrate. The sounds, smells, and sights are overwhelming to some, and the usual first reaction is to stop and stare.

Dynamic equilibrium is the best way to describe the status of the wader population in the harbor. The numbers of nesting herons shift from island to island from year to year. About eight years ago, large numbers nested on Prall's Island and fewer nested on the Isle of Meadows. Today, few nest on Prall's and many more nest on the Isle of Meadows. Similar shifts have taken place on other islands. We don't know why it occurs, but this dynamic results in a relatively stable and healthy population of herons, egrets, and ibises nesting in the harbor.

Not all of the species that live on the islands are as welcome as the herons and egrets. Double-crested Cormorants did not breed in the harbor 15 years ago, but they have had a minor population explosion in some areas. In the Kill van Kull adjacent to Shooters Island, close to 100 pairs nest on the abandoned dry-docks and partially sunken barges. On South Brother Island in the East River, between the Bronx and Queens, nearly 800 pairs of cormorants nest in the trees in a colony of Black-crowned Night-Herons and Great, Snowy, and Cattle egrets. It is a tiny island, packed with nesting birds. Cormorants also recently colonized U Thant Island in the East River, directly across

The herons' and egrets' nests are flimsy platforms of small sticks, which are so porous that you can sometimes count the eggs simply by looking up through the bottom.

With a summer population of long-legged wading birds that may exceed 4,000, the islands of the New York/New Jersey harbor (at right) support one of the largest colonies of these birds in the entire Northeast. Above, a Black-crowned Night-Heron broods its eggs on the Isle of Meadows.

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To avoid having to climb to each nest, Kerlinger (below) uses a long pole with a mirror on the end to check the contents of the nests. At far right, a young Glossy Ibis sits in its nest on Shooters island.

from the United Nations building, and they nest elsewhere on derelict piers.

When cormorants nest in great densities, their noxious feces kills vegetation. Though this is not a problem on derelict structures, it is definitely a problem on South Brother Island, where they may soon render the island unsuitable for nesting Black-crowned Night-Herons and Great and Snowy egrets. This would be tragic, because so few nesting places exist that are acceptable to these waders.

Gulls are the only other colonial nesters inhabiting the islands. Both Herring and Great Black-backed gulls are present, although the Herring Gull accounts for more than 90 percent of nesters. Nesting gulls are declining in numbers throughout the harbor, for which two reasons have been suggested. Because several landfills have closed during the past decade, food is less available. In addition, on Prall's Island, the Isle of Meadows, and a few other places, successional growth has eliminated nesting space. Sumac, gray birch, bayberry, arrowwood, and other trees and shrubs are colonizing the sand and grassy expanses where gulls nested. Nevertheless, songbirds such as Song Sparrows and Common Yellowthroats are quickly filling these new niches.

The forests and brushlands of the islands are also providing critical stopover habitat for Neotropical and North American songbird migrants. A study conducted by the New York City Audubon Society from 1996 to 1998 demonstrated that Shooters Island, Prall's Island, and the Isle of Meadows are magnets for migrating songbirds in both spring and fall. During one late-May heron survey on Shooters Island in 1996, biologists—who were preoccupied with counting heron nests at the time—observed 15 species of warblers. Likewise, in fall the trees and shrubs are sometimes filled with warblers, vireos, thrushes, sparrows, and other birds seeking shelter and food.

The waters of the New York/New Jersey harbor are crucial to the survival of the herons, egrets, cormorants, and other colonial nesters. The heron and egret colonies could not exist there until several years after the passage of the U.S. Clean Water Act of 1972, which improved sewage treatment and reduced pollution. With cleaner water and a more productive marine ecosystem, the birds colonized the area rapidly. Though oil spills in the early 1990s took their toll on the wetlands, birds, and marine life, they have all bounced back. In addition, some wetlands have been restored, especially those along the Arthur Kill. Biologists and volunteers working with the New York City Parks and Recreation department are leading the restoration. Their successful efforts on Staten Island and Prall's Island have revegetated areas that had been devastated by the oil spills.

Clean water and marsh restoration mean more fish and invertebrates for the herons and egrets to feed on. When you see a Snowy Egret standing motionless at the edge of a salt marsh, it is probably fishing. A rapid strike often is rewarded with a silversides or mummichog. Other species, such as the Yellow-crowned Night-Heron, feed on crabs and other invertebrates. This night-heron's nest is easy to identify in a colony because of the abundant crab remains. Other prey species taken by the harbor herons include eels and other fish, small shrimp, frogs, and insects.

Some of these prey are freshwater species, which means the birds often fly to freshwater systems miles from the colonies. A few of the herons and egrets even make their way to the reservoir and ponds of Central Park, to the delight of Manhattanites. Other freshwater foraging sites include ponds in the borough of Queens, on Long Island, and the headwaters of streams that flow into the Arthur Kill and Raritan Bay. Of course, these streams are urban and not always picturesque, but they are ecologically productive and serve an important function. Without them and the tidal wetlands, nesting by the herons would not be possible.

Although not many people are aware that the New York/New Jersey harbor islands are an important nesting area for herons and egrets, the islands have been studied intensively for nearly two decades. Back in the late 1970s, a birder named Scottie Jenkins from Staten Island started informing the world about the herons and egrets. The New York City Audubon Society quickly realized the significance of the resource and assumed the lead in a public awareness and research campaign. Today, the enormous task of keeping track of this large population is divided among several organizations and agencies. For 10 years, Katherine Parsons of Manomet Observatory conducted population and ecological studies for the New York City Audubon Society on five of the islands. The Audubon Society continues to conduct education and stewardship programs, as well as population research on these islands through member volunteers. The other islands are monitored by biologists from the National Park Service.

Many people joke about the New York/New Jersey harbor. After all, in many ways it is an industrial "wasteland" that has replaced native forest, dunes, and wetlands. But, surprisingly, some wildlife jewels are thriving there. The harbor herons may be one of the best examples of wildlife adapting to an urban-industrial environment. Several key ingredients make the harbor herons possible and provide for their future protection. First, the uninhabited islands provide the habitat, open space, and privacy they need for breeding. Second, the cleaner waters of the harbor and surrounding wetlands provide foraging habitat. And third, the dogged and loving efforts of people from many organizations and agencies such as the New York City Audubon Society, the City of New York Parks and Recreation Department, the National Park Service, the Baykeeper, the Littoral Society, and many more support and encourage the continuation of policies that have made this rebirth of such crucial habitat possible. ■

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*Paul Kerlinger is an environmental consultant to the windpower industry and environmental organizations. He has written a popular book on bird migration (*How Birds Migrate*, 1989, Stackpole Books) and many scientific and popular articles about birds and ecotourism. Tom Vezo is a top bird photographer whose work frequently appears in this magazine.*

TAKE YOUR CHILDREN BIRDING

BY MICHELLE ALTEN
PHOTOGRAPHS BY WOLFGANG KAEHLER

Teaching youngsters about birds enriches their lives and helps create future conservationists

It is a quiet morning at Witty's Lagoon. Our troops are ready for action. Ten boys and girls pull out their binoculars and begin scanning a shoreline fringed with reeds. "Hey look! There's a really tall bird standing on a log," one boy calls out. "See it? It looks kind of like an Ostrich."

"That's a Great Blue Heron," says ornithologist Mike McNall, setting him straight. As the children raise their binoculars and peer through spotting scopes, he explains, "Take a look at his legs—they're long, like those of most wading birds. He also has a very long neck and bill. Great Blue Herons need them to reach down and snatch up fish in shallow water."

My husband and I are taking our children on a family birding tour with the Royal British Columbia Museum, in Victoria. On this trip and other outings, our children are discover-

ing the amazing world of birds. With McNall—manager of the museum's ornithology collection—as our guide, we stroll around the ponds, marshes, and lakes, in search of feathered friends. "When you watch birds, be sure to look carefully at their beaks and feet," he explains. "They can tell you a lot about what the bird eats and its habitat. They can also help you determine whether it is a shorebird, raptor, duck, or perching bird. Shorebirds, for example, like that Greater Yellowlegs over there, have long toes that keep them from sinking in the sand. Its elongated beak enables it to forage for worms and crustaceans." We watch as a Mallard saunters effortlessly across a muddy shore. "The duck's webbed feet act like snowshoes and keep him from sinking," McNall adds.

Most children are fascinated by birds, once they've had an introduction. At left, youngsters on a tour with the Victoria Museum in British Columbia take turns using a scope to view a Great Blue Heron (above).

Freshwater habitats are an ideal destination for your child's first birding adventure. Here, children can easily watch ducks and shorebirds swim on a pond or lake or strut about near the water's edge. Water birds are also likely to be larger than most songbirds, and "bigger is better" when it comes to the junior birder. We scan the lagoon for other visitors. Together, we spot Northern Pintails and an American Wigeon. Stefan, my eight-year-old, yanks out his camera and snaps a few shots. Then McNall points to another bird. "Take a look over there," he says. "That's a Eurasian Wigeon. It's an unusual sight around here. See its reddish-brown head?" Stefan glances through the scope. "Oh yeah! I can see it!"

Eagles and other raptors are a highlight on birding adventures with children. These birds mean action and their prodigious size and hunting prowess are enough to excite any young birder.

When children first begin to look at birds, they often think that a duck is a duck is a duck. But educators in the world of ornithology have some tricks and tools for teaching children how to identify their avian friends. Meredith Kusch, coordinator of the Cornell Laboratory of Ornithology's Classroom BirdWatch, often gives children sketches of birds to color. As the children carefully color the images, they learn to pay attention to the colors and markings of birds. The simple drawings also help them see the birds' shapes and perching positions.

"With dark birds, it gets more difficult," Kusch explains. "Children often confuse European Starlings with Red-winged Blackbirds. With these black and brown birds, kids need to look at their shape and size. I often ask them, 'Is it the size of a junco, robin, or chickadee?' Then I ask, 'Does it have a crest? How big is the bird's bill? How does it perch?'" Kusch's questions guide the children until they have enough information to identify the bird.

As children gain more experience, they gradually begin to focus on finer details. They start to notice whether a bird's bill is short and wide or long and slender. They may discern eye stripes or wing bars or observe how a bird flies. Lyanda Haupt, education coordinator of the Seattle Audubon Society, takes Peterson field guides and flash cards along on outings with children. She uses the guides to make children aware of the variety of birds that exist, then she begins pointing out special markings that help with identification. In field notebooks, children jot down their observations. "This gives them a record of their day and introduces them to the kind of notes that real ornithologists keep," explains Haupt.

At natural history museums, aquariums, and science centers, children can learn by looking at collections of bird skins or mounted birds. Our tour with the Royal British Columbia Museum includes a behind-the-scenes visit to the bird and egg collection, which is used for scientific study. The kids enjoy taking a close-up look at beaks, feet, and the anatomy of the different species that we have seen in the field. Together, we examine bird eggs, comparing the differences in their size and coloration and discussing the importance of camouflage.

Back in the field, we quickly identify a few birds and then discuss their behavior. We spot a Western Grebe with its long slender neck as it swims past close to shore. The bird pokes its bill in the water and dives beneath the surface. McNall explains that the bird is searching for small fish. Not far away, a Mallard uses its shovel-like bill to scoop up aquatic plants. Learning the mysteries of how birds forage for food and survive in their habitat brings birding to life for children.

McNall suggests that we pan the tops of the trees to see if we can spot a Bald Eagle. "I think I see one!" a child calls out. Sure enough, we see the majestic, white head of an adult eagle rising above a Douglas fir. McNall explains that eagles in this area hunt for gulls and rabbits. "Cool!" says a boy as his dark eyes widen.

Eagles and other raptors are a highlight on birding adventures with children. These birds mean action, and their prodigious size and hunting prowess are enough to excite any young birder. Smaller birds may not be showstoppers, but children are proud when they recognize some common residents. Later—on a nature walk at a park near Seattle, Washington—Tatiana, my five-year-old, sees chickadees sailing from bush to bush. Suddenly, an odd rattling noise comes from a willow near the water. "Mom, what's that strange sound?" she asks. We search the trees and spy the unmistakable shaggy, blue-gray crest of a Belted Kingfisher through the branches.

Bird vocalizations are usually difficult for children to distinguish at first. But in the springtime, kids can enjoy an introduction to the diversity of bird songs. Common birds can provide a simple lesson. Children can listen to a jay and compare its raucous call with the graceful melody of a Song Sparrow. Spring also offers a plethora of opportunities to teach children about nesting and breeding behavior. At a park in the San Juan Islands in Puget Sound, we watch a covey of California Quail parade through a meadow. Half a dozen newly hatched chicks, barely bigger than tulip blossoms, straggle behind a pair of adults. The children and I discuss how quail may lay a clutch of more than 10 eggs, whereas a Bald Eagle rarely has more than two.

Later in the season, we spot a family of American Robins on a park lawn. An adult pokes it's bill into the grass, pulls out a worm, and places it gingerly in its youngster's bill. Our kids watch, amazed at how the adult birds nurture their young.

While the children and I look at birds, we always take time to enjoy the little discoveries along the way. At one park, Stefan marvels at a bright yellow banana slug at the edge of a trail. Tatiana giggles as a Mallard struts past with a blade of grass dangling from its bill. Then she finds a treasure: a beautiful heron feather that glistens in the noonday sunshine. These are the kind of surprises that children remember and delight in so thoroughly.

We also learn about habitats and ecosystems and the wild denizens they contain during our bird walks. At a waterfront park in Kirkland, Washington, Vivian Gross, president of East Lake, Washington's Audubon Society, explains that the area where we are walking was once a golf course. When the course shut down, the local parks department took over, turned off the water pumps, and let the area

An adult Bald Eagle, far left, provides a spectacular sight for a group of budding birders. Although smaller birds don't always evoke the same excitement in children as a large raptor, kids are always proud when they recognize a bird—be it rare or common.

RESOURCES FOR BUDDING BIRDERS

EQUIPMENT: Birding specialty shops, Nature Company stores, and many outdoor catalogs offer a variety of binoculars. You may wish to start your kids out with a $20 pair of children's binoculars. But once your children can be trusted not to drop them, purchasing better-quality binoculars will certainly make their birding far more interesting and enjoyable. Many birders recommend starting with 7x35 Porro prism binoculars, which are powerful enough for effective birding and tend to be reasonably priced.

WHERE TO GO: To find out about local bird-watching opportunities, contact your local chapter of the Audubon Society. Many of them offer guided bird walks geared toward families. Children may also be welcome on their other outings, but remember, the attention span of young children is probably limited to about an hour. Also contact local parks departments and natural history museums to see what walks, classes, and tours they offer.

GET FESTIVE: Many areas around the country have begun to organize festivals to coincide with impressive congregations of birds. Children can take walks with naturalists, participate in educational activities, and learn about the avian world. Check your local Audubon chapter for a list of bird-related festivals coming up in your area.

RECOMMENDED READING: *Sharing the Wonder of Birds With Kids,* by Laura Erickson, provides helpful suggestions for teaching children about birds. The Peterson field guide series also works well for children, because arrows point out the major field marks they should use to identify birds.

return to wetlands. We stroll along a boardwalk amid towering cattails, their brown heads bursting with white, cottony fuzz. "Cattails are an important part of wetlands," Gross points out. "Grebes anchor their floating nests to them, and Marsh Wrens use the fluff to construct their nests. Other birds eat the cattail seeds. At one time, Native Americans used this site as a summer camp. Guess what they used cattails for?" she asks. "They wove the leaves into baskets and used the fluff to make diapers."

As we hike near the water, Stefan notices a mound of logs and branches in the middle of a bay. "Look, a beaver lodge," he points out. Tatiana spots a tall pole with two cormorants perched on top. "That's a new Osprey nesting platform," Gross explains. "Our local Audubon chapter constructed it because the Ospreys that once frequented the area no longer had a place to nest. We hope that they will return and use the platform this spring."

Our nature walk turns into a useful environmental lesson. The children learn how birds depend on their habitat for food and nest sites and how biologists and ordinary citizens can assist an endangered ecosystem and its wildlife. Who knows? Given this frequent exposure to nature, one day they may become staunch conservationists, helping to preserve the wildlife and ecosystems they have come to love. ■

Michelle Alten is a freelance writer, specializing in travel, art, and conservation. Wolfgang Kaehler is an internationally renowned nature photographer.

For children, bird walks serve as an introduction to all of nature. Far left, some youngsters in Washington State examine a cricket—a food source for many birds. Above, a California Quail strolls through a colorful garden, providing another life bird for a young bird watcher.

RUNNING AWAY FROM HOME—AT BIRTH

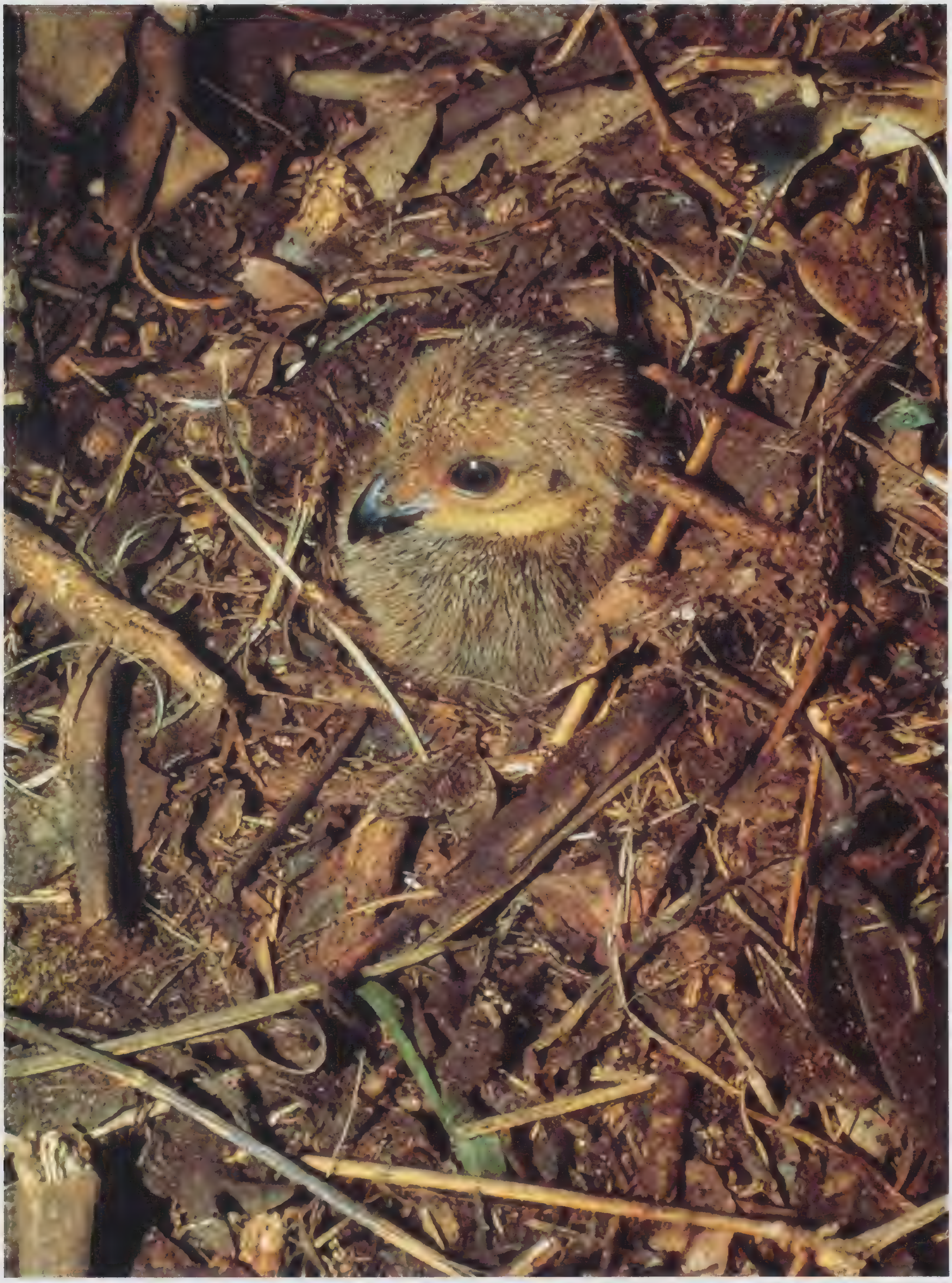
TEXT AND PHOTOGRAPHS BY DARRYL JONES

Young megapodes are the most precocious of birds, but can they survive in the modern world?

The cameraman was trying hard to hide his feelings, but it was obvious that he didn't believe me. After a couple of hours of squinting through the viewfinder of his motion-picture camera, nothing had changed. The large, somewhat elongated, goose-egg-sized egg was still there, and it didn't look any closer to hatching. The shell—which had once been cream colored—was now stained and mottled. And instead of resting dry and warm in a nice, soft nest, the egg lay half buried at the top of a box full of damp dirt and leaves, where it had been for 45 days.

"No, really, this egg is definitely about to hatch," I assured him. But I could tell he was thinking: This egg is rotten; it's discolored, wet, and in the most appalling conditions! He certainly had a point. Normally, no egg could survive in these conditions—buried in moist soil, never turned, kept at 90 percent humidity, and completely abandoned by its parents for a month and a half.

But this was no ordinary egg. It had not been laid by an ordinary bird and had not been incubated in an ordinary nest (even before I brought it into the laboratory). And the chick inside was certainly no ordinary chick. The egg had been laid by an Australian Brush-turkey—a Wild Turkey-sized bird that lives in the rainforests of eastern Australia. The brush-turkey is one of 22 species of megapodes (Family *Megapodiidae*, which literally means "big-feet") distributed throughout the islands of Indonesia, the South Pacific, and Australia. Gamebird-like in appearance (and they are closely related to this group), megapodes



A female Australian Brush-turkey lays an egg deep in a hole she has excavated in an incubation mound (far left). Instead of incubating their eggs in a nest like most other birds, megapodes like these lay their eggs in naturally warm places and leave them to hatch unattended. Forty-five days after the egg is laid, a newly hatched brush-turkey emerges from the incubation mound—after perhaps a day of digging (at left).

differ from all other birds in their bizarre method of incubation. Instead of incubating their eggs in a nest, using their own body heat for warmth, megapodes deposit their eggs in naturally warm places such as volcanically heated soils, dark beach sands, or, most commonly, in mounds of decomposing leaf litter and leave the eggs to hatch unattended.

These strange incubation areas are carefully selected by the females that lay the eggs. They need to provide a safe, reliable "nest" of the right temperature—between about 31 and 35 degrees C. For megapode species that lay their eggs on beaches or the sides of volcanoes, egg-laying requires traveling to the incubation site—a location usually some distance away from the birds' regular home range. These hot places may be ideal for incubating eggs, but they are often terrible for finding food, so foraging areas are separate from "nesting" areas. These species do little to prepare the site for their eggs, perhaps just digging a shallow hole in the beach sand or tunneling into the soil at the end of a long burrow beside a hot-water stream.

The species that use naturally occurring locations are called "burrow-nesters" to describe the way they access their incubation site. "Mound-builders," by contrast, create their own incubators by gathering huge amounts of moist leaf litter and soil from the forest floor. These mounds are essentially compost heaps that heat up naturally as enormous numbers of microorganisms break down the organic matter. Mound-building megapodes are actually harnessing and concentrating a naturally occurring phenomenon and controlling it by manipulating the size and shape of the mound and carefully adding and mixing fresh material to provide a predictably warm heat source.

One primary feature of all megapode incubation methods is that, once it is laid, an egg receives no further attention from either parent.

Obviously a major difference exists in the amount of work required by burrow-nesters and mound-builders. But one primary feature of all megapode incubation methods is that, once it is laid, an egg receives no further attention from either parent. It is effectively abandoned. The only indirect assistance any megapode receives is the maintenance activities of mound-builders adding and mixing material to keep the bugs happy. And they do this regardless of the eggs inside.

When the hatchling eventually emerges, it finds itself alone in a hot, dark hole with relatively little oxygen and rather too much carbon dioxide. Rather than scurrying off to join the rest of its clutch of siblings under the careful attention of a parent, as do most other ground-nesting species, these young birds' first taste of life is to dig their way through up to three feet of dirt and sticks to reach the surface.

Because all of this occurs well beneath the surface, the process is difficult to observe. Hatching is just one feature of megapode chick behavior and development that we have been studying at Griffith University in Queensland, Australia, for several years. Mainly through the work of graduate student Sharon Wong, we have been looking at a variety of phenomena associated with this poorly understood start to the life of a megapode. The unusual nature of the incubation process has required us to develop numerous methods to allow us to see what is happening. For example, to observe hatching, we have to take one of the eggs we are incubating in the laboratory and lightly embed it in the warm soil of an incubation box. Because each day Sharon candles all of the eggs (shining a specially designed flashlight through the shell to illuminate the interior of the egg), we knew that the egg we were observing was on schedule and would hatch momentarily. A nature documentary film team from Japan had asked to film the event, and we were all just waiting.

Then, unexpectedly (we had been waiting for most of the day), the egg jostled abruptly and violently cracked into several large pieces. No gentle pipping and gradual chipping away with the egg tooth here—this baby literally crashed through the shell, using both large feet and its back. As the shell and internal membrane parted, we could see the hatchling clearly. Its eyes soon began to blink as it stretched repeatedly, moving backward away from the shell and membrane onto the surrounding soil. (In the natural situation, these actions would slowly take the bird to the surface—a strenuous journey of hours or even days, depending on the depth and type of material in which the egg had been buried).

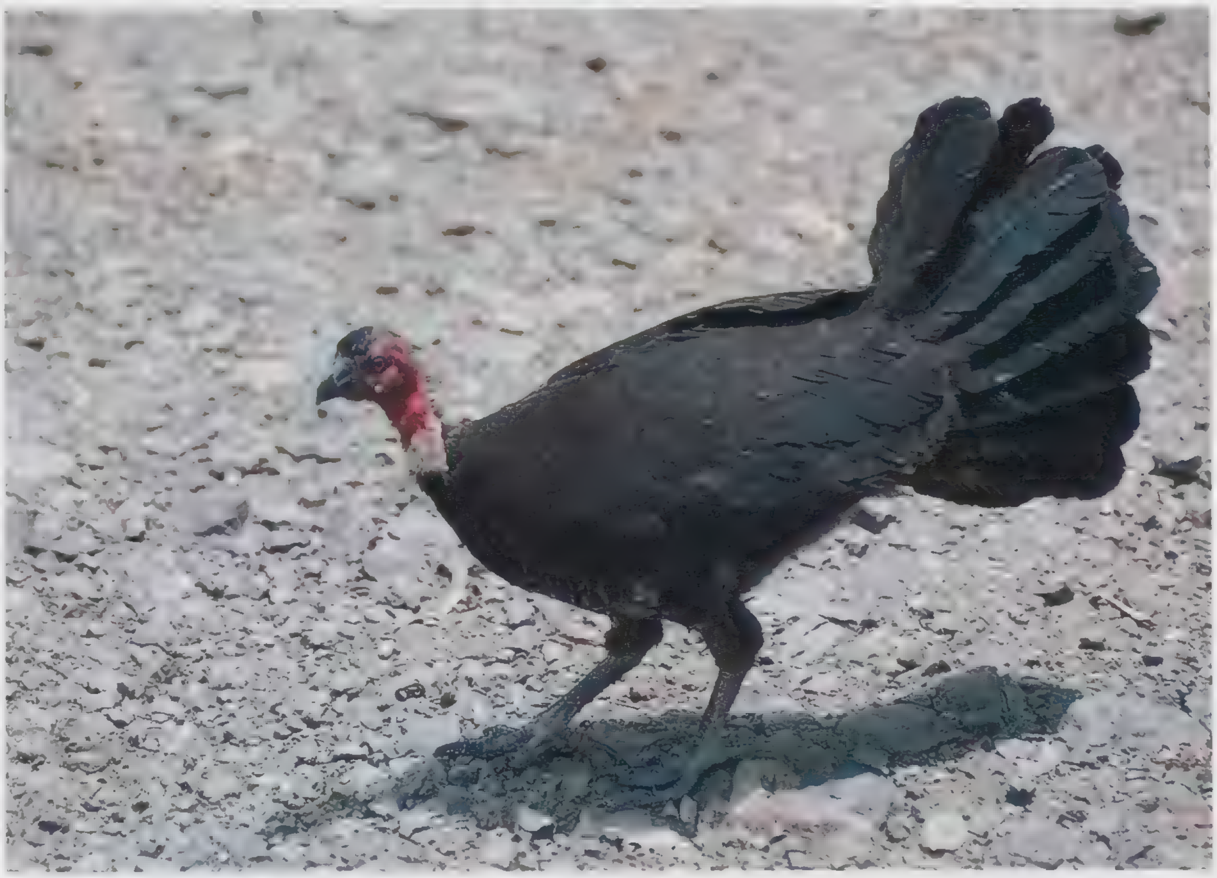
Within 10 minutes, this brand-new chick was standing uneasily and looking around, its fully feathered body still damp and sticky with dirt and sticks. After an hour, it was walking strongly around the top of the box we had set up for filming. As I carefully moved forward to capture it, the bird spread its untried wings—complete with primaries and secondaries—and was about to flutter away as I gently grabbed it. That night, at four hours old, this hatchling scrambled to the branches in the top of its aviary to roost, and the next day it was foraging by itself, running away from disturbances, threatening other hatchlings, and looking very much prepared for life. Now, that's what you call a "mega-chick."

Several schemes exist for classifying the level of development and independence in hatchling birds. These typically identify levels along a continuum from the most helpless and dependent chicks (the majority of small passerines), known as "altricial," through an array of more capable, strong, feathered, and independent classes of "precocial" chicks. With most of these schemes, young megapodes are either off the scale or in a class of their own: superprecocial. But why should they be so advanced? What would lead to the natural selection of such independent chicks?

The answer is directly tied to the phenomenon that defines what a megapode is—the birds' method of incubation. Although different megapode species employ a variety of methods to find or build incubation sites, all of them use a heat source that is separate from their own body. The "nest" itself provides the warmth to incubate the egg. This means that megapode eggs begin to develop immediately upon being laid. With most other species of birds, the female lays her eggs one at a time and the embryos don't start developing until the clutch is complete. The adults then start brooding the eggs, so that the young normally hatch at roughly the same time. For ground-nesting species, which move away from the nest soon after hatching, the horde of almost identically aged chicks can then be safely sequestered by the attentive parent. The clutch-mates develop and learn together, until they leave the family at varying stages of fledging and independence.

None of this is possible for megapodes. Once those big eggs are placed in their damp, dark holes, the embryos start their developmental passage toward the day of emergence, 45 days later (or thereabouts, depending on the temperature of the site). The chick hatches and emerges from the site completely independent of the progress of any other eggs—and independent of anything but its own internal clock and level of energy. Even if they wanted to, the megapode parents would find it difficult to be near the incubation site to gather up their young as they emerge—incubation takes too long and the time of their offsprings' emergence is too unpredictable. These chicks, therefore, have to look after themselves from day (and minute) one.

It is easy to see the decisive clarity of natural selection in this story. The eggs, though not particularly large, have exceptionally large yolks (up to 70 percent of the entire volume of the egg—among the highest proportion of any bird). Young megapodes are big, strong, and well developed, considering the constraints of egg size and female physiology. Bigger and stronger chicks are better able to clamber out of the site, run away into the nearby forest, escape predators, roost out of reach at night, and handle the temperature changes associated with the world outside the egg—and they must do this immediately. So, megapode embryos



HERBERT CLARKE

A male Australian Brush-turkey is a large bird, with bright head and neck coloration. The birds can extend or retract their bright yellow neck sacs at will. Unlike most galliforms, or chicken-like birds, megapode young apparently do not imprint on their parents. But how do they learn to recognize others of their kind when they reach breeding age? And how do they learn to build mounds? Is it all instinctive? We have so much to learn about these fascinating birds.

stay inside the egg for much longer than a similarly sized galliform, or chickenlike bird, growing stronger and developing in critical areas such as flight feathers and leg muscles.

Upon hatching, however, the chicks are not especially large compared with other galliforms. But they are physiologically well ahead and grow rapidly during the first few weeks of their lives. By the time they reach six weeks of age, they are three quarters the size of an adult, and they will have teamed up in groups with similarly aged birds. At this stage, the major threats to their survival have passed, and they can start being social. Before this time, however, megapode chicks are remarkably antisocial. Should they encounter anything that moves, be it another chick, an adult, or another species, they always run rapidly away. If two chicks a few days old find themselves together, they fluff up their feathers and make aggressive bluff threats, with wings extended, before disappearing into the nearest thicket.

Author Darryl Jones, above, must excavate incubation mounds to collect megapode eggs—a job that sometimes requires him to remove several tons of soil and organic matter.

This is remarkable behavior for birds apparently closely related to the galliforms. One of the behavioral features that has been carefully studied in such gamebirds (as well as in ducks and geese) is the special bonding that occurs soon after hatching between parents and newly hatched chicks—a phenomenon known as imprinting. Extensions of this idea now include "sexual imprinting" and other types of affiliations that clearly seem to enhance survival (staying close to the adult most likely to look after you) and eventual reproduction (recognizing what the other sex looks or smells like). Although seemingly universal in chickens and waterbirds (and many other animals), imprinting would seem to be unlikely in megapodes.

Sharon Wong has been testing the presence and strength of imprinting tendencies in brush-turkey hatchlings. Using the familiar apparatus and methods of imprinting researchers, Sharon has exposed day-old brush-turkeys to various objects, including striped balls and models of adult brush-turkeys and chicks. Following a standardized period, she has observed whether the chicks follow the imprinted object around an arena or spend more time with the object in an open box. The results are not particularly dramatic to date, but they confirm the important idea that no imprinting is taking place.

This makes sense. Observing the reactions of adult megapodes toward their hatchlings, it is clear that they do not recognize these little brown things emerging from their mounds as offspring or perhaps even as the same species. Hatchlings are treated in the same way as any other small intruder—they are tossed off in a cloud of leaves and dirt. If this is the type of reaction a newly emerged chick can expect from its parent, it's probably best not to form any close relationships. The only alternative: turn off the imprinting mechanism altogether.

If this is the case, many related questions arise. How do the birds recognize the opposite sex? How do they learn how to build mounds? How do they learn what a predator looks like? Or is it all instinctive? We have so much to learn.

Young megapodes seem to be in a desperate hurry to grow up—and with good reason. With no one there to provide protection or teach them important survival skills, such as how to deal with predators, megapode hatchlings are particularly vulnerable. Their chances of survival, perhaps surprisingly, are much higher when they are embryos buried in the incubation site. Although a potential predator could easily find an incubation site (especially a huge mound that's being continuously tended by an adult), extracting the eggs poses a challenge. Relatively few animals are capable of digging into a mound and excavating vast amounts of material to find the eggs. And even animals that can—such as some large lizards—rarely find all of the eggs during one visit. The probability of a female losing all of her eggs to predators for an entire breeding season is usually low. Females lay eggs at irregular intervals over many months, and few predators appear able to remain near mounds and specialize on megapode eggs. (There seem to be only two exceptions to this: giant Komodo dragons can excavate entire mounds of the Orange-footed Megapode at each visit and, in Australia, the Red Fox—an introduced species—causes overwhelming egg losses in some populations of the endangered Malleefowl.) Similarly, the extremely unpredictable timing of the young birds' emergence greatly reduces the possibility of a particular predator grabbing all of the chicks as they appear.

No, the real danger period for these advanced but still vulnerable chicks is during the first few days and weeks of their lives. They may be able to run and flutter, but these are poor defenses against most predators. Quite an array of animals find plump megapode babies appealing, including snakes, monitor lizards, raptors, and numerous mammal predators. Against these dangers, the universal response of megapode chicks seems to be the same: make a mad and erratic dash through the undergrowth—then freeze. Most of these chicks have cryptic markings and are nicely camouflaged among the chaotic patterns of rainforest leaf litter. Nonetheless, this tactic is not that effective against many fleet-footed and smell-sensitive predators; the vast majority of hatchlings are eaten within their first few weeks of life. Few reliable data exist, but I estimated that 90 to 97 percent of the brush-turkey hatchlings in one rainforest site were killed by predators. In locations heavily infested with feral domestic cats, the figure is likely to be even higher.

The evolutionary achievement of the megapodes is one of the remarkable features of the bird world. But factors such as habitat fragmentation (which reduces the places where chicks can hide) and the arrival of new predators (many of which were introduced by humans) pose serious threats to many species. Thirteen of the 22 species are in trouble, five critically so, and the activities of humans are deeply implicated in all of these cases. Sometimes, even having the most precocious young in the world may not be enough to ensure the survival of a species. ■

Darryl Jones is a lecturer at Griffith University in Queensland, Australia, and coauthor of The Megapodes *(Oxford University Press, 1995).*

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FLORIDA SCRUB-JAY BY TIM GALLAGHER

SNOWBIRDS?

BY PAUL ZIMMERMAN

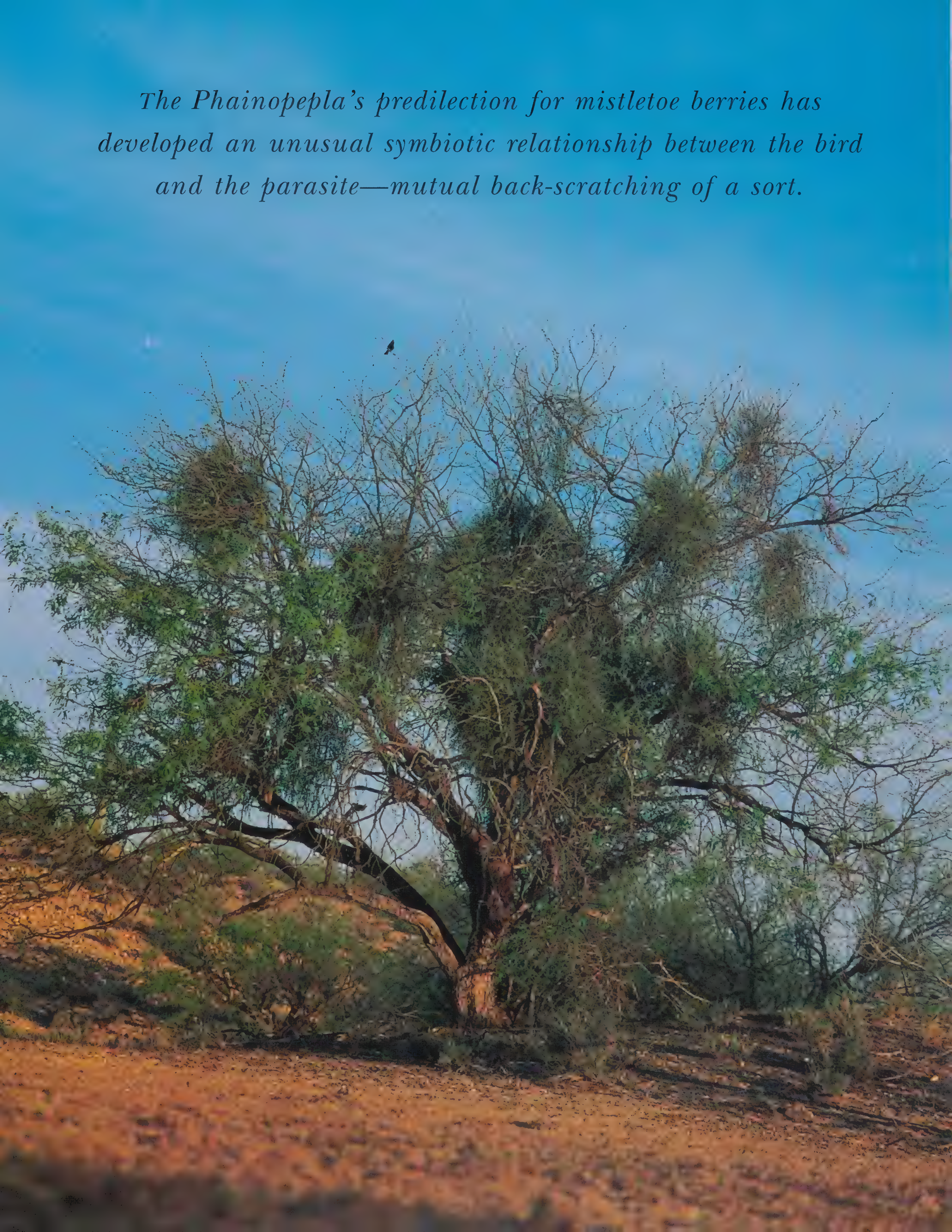
Phainopeplas descend on the Southwest en masse each winter—not to escape blustery weather but to feed their craving for mistletoe berries

Each winter there's an exodus of people from northern and midwestern states, all headed for the milder climates of the Southwest. They are affectionately known as snowbirds; affectionately because they enhance the local economy, snowbirds because it seems that as soon as it snows in one of these states, there'll be an influx of cold-adverse residents of that state into various southwestern cities.

There's an avian counterpart to these sojourning humans—a lustrous, black, elegantly crested bird with an arresting red eye: the Phainopepla. Like human snowbirds, populations of these silky flycatchers begin arriving in various Sonoran Desert areas about November, enhancing the local scenery. But while the Phainopepla, like its human counterparts, arrives in the Southwest en masse in the winter, it is not impelled by blustery weather—as likely as not it left a moderate climate. What has drawn it to the Southwest is its affinity for the berries of the desert mistletoe. These berries appear in early winter, just when other food sources are scarce, and they flourish during winter and spring. Such is the Phainopepla's predilection for mistletoe berries that its diet consists of them 100 percent during the winter, 94 percent in spring, and—despite the plentiful array

A male Phainopepla—his red eye aglow in the morning sunlight—returns from gathering mistletoe berries, regurgitates them from his crop, and feeds them to his hungry nestlings. The berries range in color from greenish-yellow to red.

PAUL ZIMMERMAN



The Phainopepla's predilection for mistletoe berries has developed an unusual symbiotic relationship between the bird and the parasite—mutual back-scratching of a sort.

of insects available at this season—88 percent in summer. The Phainopepla is the only North American bird that has such a concentrated diet of a single food.

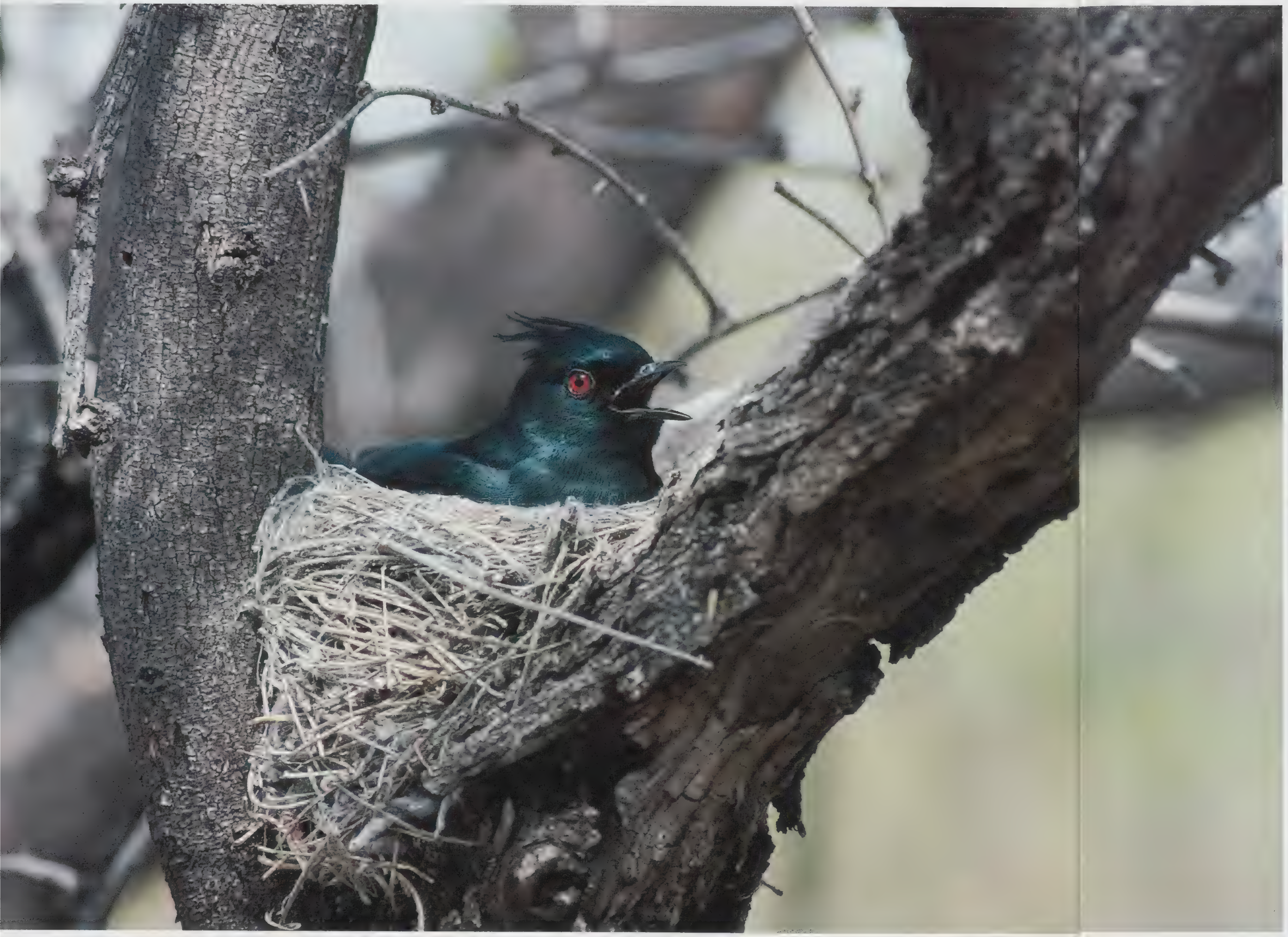
The desert mistletoe (*Phoradendron californicum*) is a parasite. In the Southwest, it is most often associated with mesquite trees, but it also uses palo verde and a number of other trees and shrubs as hosts. From its tiny seeds sprout huge, hanging festoons, which often cover much of the host tree, remaining attached to it for decades.

The Phainopepla's predilection for mistletoe berries has developed an unusual symbiotic relationship between the bird and the parasite—mutual back-scratching of a sort. The Phainopepla has evolved an anatomical modification of its gastrointestinal tract: a small, thin-walled gizzard that removes the berry pulp without injuring the seeds as they pass through the bird's digestive system. The seed has a sticky coating, and as the Phainopepla flits from tree to tree some of its droppings adhere to branches. If conditions are right, the seeds will germinate and penetrate into the branches. As water and nutrients are absorbed, the tree branches are deprived of their ability to support normal growth. Over time, these branches die, and if many of the tree limbs are infested, the tree may die. Although several other species of birds eat mistletoe and spread some seed—often by wiping their bills on branches—the Phainopepla is by far the greatest disperser of this parasite.

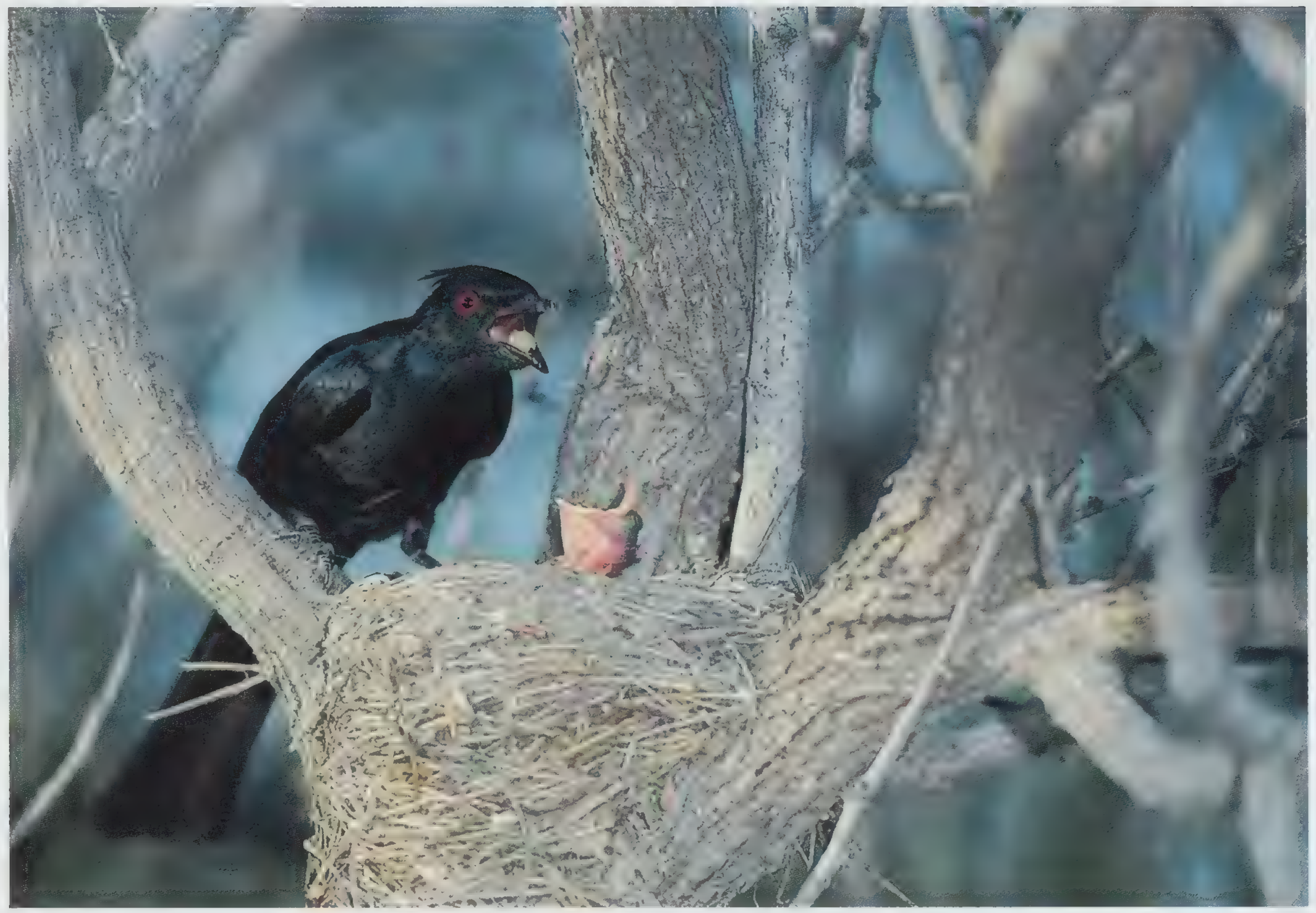
A Phainopepla perches on a mesquite above its nest—hidden in one of the mistletoe clumps (far left). These clumps, at left and above, are frequently chosen as nest sites, because they provide concealment from predators and a ready food supply. Above, the female simply leans out of the nest to pluck several mistletoe berries, which she then regurgitates for her young.

PAUL ZIMMERMAN (3)

G.C. KELLEY



RICK AND NORA BOWERS



A male Phainopepla takes a turn brooding its eggs, above. Top right, the male regurgitates a mistletoe berry for its young. In late spring, most Phainopeplas leave the Sonoran Desert region, heading for cooler areas such as California's Pacific slope, right.

The Phainopepla raises its second brood in its alternate habitat, and it is the only North American bird with this trait.

The dispersal of mistletoe seeds by birds has been going on for millennia, here and in other countries. In fact, the mistletoe's ability to sprout from bird droppings may well have given the plant its name, speculates Carlos Martinez del Rio of the University of Arizona's Department of Ecology and Evolutionary Biology, who has studied the relationship between birds and mistletoe in the United States, Chile, and Mexico. He says that the word mistletoe probably came from the Anglo-Saxon word *misteltan,* a compound of *mistel,* meaning "dung," and *tan,* or "twig."

Considering their affinity for mistletoe berries, it's not surprising that in March or early April, when the Phainopeplas begin rearing young, they often choose a mistletoe clump as a nest site. Not only is the nest thus out of sight of avian predators, but getting food for the young is a snap. The parent simply leans out of its nest, plucks several berries, which it retains in its crop, and then contracts its throat to bring up one berry at a time to feed its young.

With spring comes the reappearance of flying insects, and these "silky flysnappers," as the birds were called colloquially in the 19th century, perch atop mesquite, palo verde, and ocotillo, and from there sally upward to snatch insects in midair, displaying the white patches on their wings, which readily identify the birds in flight.

As spring wanes, the mistletoe has been pretty well picked over, the young have become independent, the summer heat is just around the corner, and, like human snowbirds, *Phainopepla nitens*—"shining cloak" in Greek—begins thinking of cooler climes. Of the approximately 650 species of birds that nest in the United States and Canada, about 130 are nonmigratory, of which the Phainopepla is one. The species does, however, have the unusual characteristic of making two seasonal movements to alternative habitats—one, as previously described, in winter to Sonoran Desert regions, and the second in late spring to neighboring areas, such as California's Pacific slope and parts of Nevada, New Mexico, Utah, and Texas. Our knowledge of which populations move in which directions remains elusive, and the bird is a subject of ongoing study.

As if the Phainopepla hadn't already distinguished itself from most of its brethren, it has a further unique characteristic. Although many species produce a second brood in a season, they do so in the same habitat. But the Phainopepla raises its second brood in its alternate habitat, and it is the only North American bird with this trait. ■

Paul Zimmerman is a freelance writer/photographer based in Tucson, Arizona.

HERBERT CLARKE

BHL

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In the Field

WHY FORKED-TAILED MEANS FRIENDLY

by *Jack Connor*

Birds with forked or notched tails are almost always gregarious

One advantage of being an amateur ornithologist is a certain freedom from responsibility. Predictions, speculations, and wild guesses come and go more easily when your professional reputation is not on the line. You can spout a theory one week, reverse yourself the next, and laugh it off if anyone points out the contradiction. This is why amateurs seem to have more fun talking birds than professionals do. Professional ornithologists prefer to qualify their remarks, avoid hyperbole, and caution that more data should be collected before final conclusions are drawn. Amateurs feel freer to shoot from the hip. Professionals also have the annoying habit of being correct more often than amateurs, but we really shouldn't hold that against them.

All of this is by way of warning about the speculation that follows: my explanation for a pattern that may not even be a pattern when all the data are in. You should take it with a grain of salt—and a follow-up gulp of beer. It comes from an amateur, and I, therefore, reserve the right to change my mind by this time next week. In the meantime, however, let me lay it on you.

Have you ever noticed that birds with forked and notched tails are almost always among the most gregarious of birds? Barn Swallows, Purple Martins, and White-throated Swifts, for example, feed in flocks and nest in colonies. Most terns, too—including Least, Arctic, Forster's, Common, Royal, Sandwich, Elegant, and Sooty—have forked or notched tails and also feed in flocks and nest in colonies. Frigatebirds have spectacularly long forked tails, and they, too, regularly feed together and nest together. In Europe, all four species of swifts—Common Swift, White-rumped Swift, Pallid Swift, and Alpine Swift—like most swifts worldwide, have forked tails and feed and nest together. The pratincoles of Europe, Africa, Asia, and Australia—especially the Black-winged, Collared, and Oriental pratincoles—have the most deeply notched tails of any of the world's shorebirds, and they, too, both feed in flocks and nest in colonies. The only two raptors in the world with deeply forked tails, the Scissor-tailed Kite (*Chelictinia riocourii*) and our own Swallow-tailed Kite (*Elanoides forficatus*) are distantly related to one another, despite their look-alike silhouettes. Nevertheless, they are also distinguished from most of the rest of the world's raptors by their willingness to feed in flocks and to nest in colonies (regularly in *C. riocourii*, occasionally in *E. forficatus*). Among the few other gregarious hawks in the world are three kites—the Black Kite of Europe and Africa, the Plumbeous Kite of Central America, and the Mississippi Kite of the southern and western United States—whose tails are notched.

Could this apparent pattern—involving at least five different orders of birds and more than a dozen genera—be only a coincidence? Or, can we discover a logical connection between tail shape and social behavior?

Sipping your beer, you can guess where I'm going. I vote for a causal chain of four links.

Link 1: *Forked tails enable and enhance aerial feeding.*

All of the birds listed above catch and consume their prey *on the wing.* Swallows, martins, swifts, and pratincoles pursue flying insects, which they catch in flight and swallow immediately (except when feeding young back at the nest). Terns, too, feed on the wing—diving on fish and then swallowing them in flight. Frigatebirds snatch fish from the surface and pirate fish from gulls and terns, always feeding in flight. Even the Swallow-tailed Kite, which feeds on snakes, lizards, and nestling birds as well as flying insects, habitually consumes its prey on the wing—snatching a snake from a tree branch, for example, and carrying it up into the sky to tear it apart. Dragonflies are the kite's most frequent prey, however, which leads us to . . .

Link 2: *Aerial feeders specialize on small, swarming prey.*

Swallows and swifts chase gnats, mosquitoes, and midges; terns and frigatebirds pursue schooling fish. To appreciate the specializations involved here, contrast the methods of swallows and terns with the methods of two groups of square-tailed birds, kingbirds and kingfishers.

Like swallows, kingbirds snatch insects in the air, but unlike swallows, they generally do not feed in flight. Kingbirds have larger heads and larger bills than swallows, and wide tails that facilitate aerial braking. They specialize in preying on large, solitary insects, which they snatch in out-and-back forays from a perch, and almost invariably they must carry their prey back to the perch to consume it. Because kingbirds are heavier-bodied, flying requires more energy, and so they spend much less time in the air than swallows, make fewer catches per hour, and generally must wait for the insects to come to them. They rarely pursue swarms high into the sky (their need to return to the perch makes that difficult). They compensate by taking larger prey—bees, wasps, moths, beetles, and other insects too big for a swallow to take. Swallows have evolved along a different line. In a sense, swallows have traded the ability to capture large prey for more efficient flight—their small heads, small bills, and long tails make flight less costly, so they can pursue swarms high in the sky or far out over water, where kingbirds seldom feed. The kingbird takes fewer, bigger bites each day; the swallow takes lots of little ones.

You can find the same themes in a comparison of kingfishers and terns. Kingfishers, square-tailed and relatively heavy, capture larger prey, but terns, forked-tailed and light, go where kingfishers cannot. Both hunt on the wing, plunge-diving from above to snatch fish below the surface, but kingfishers have bigger heads and bigger bills than terns and their flight requires more energy, so they must stay close to land. Their bills and heads may enable them to capture larger prey than terns, but they cannot stay airborne as long and generally must carry their prey back to a perch. Unlike terns, they cannot pursue schooling fish over open water or for long distances, and so, like kingbirds, kingfishers specialize in sit-and-wait hunting. Terns, "the swallows of the sea," have traded the ability to capture large prey for lighter bodies and less costly flight. This enables them to pursue swarming prey over long distance, which brings us to . . .

Link 3: *Small, swarming prey generally cannot be monopolized.*

Terns, swallows, swifts, pratincoles, kites, and other aerial feeders rarely fight with members of their own species over prey because disputes over small, zigzagging prey don't pay off sufficiently. Why fight over a single killifish or mosquito over here when there are 20 others you could chase over there? Stopping to fight also means investing time better spent taking advantage of your chance at the swarm. When your diet requires dozens or hundreds of prey items each day, no single capture means much. A Red-tailed Hawk chasing another of its species from a rabbit gets a huge, nutritious meal as its reward, a capture that might feed the hawk for a day or two, and so red-tails fight regularly with one another. A Swallow-tailed Kite, on the other hand, chasing another swallow-tail from a dragonfly would be wasting its time, which leads us to . . .

Link 4: *Predators of prey that cannot be monopolized do better in flocks than solo.*

If you can't beat 'em, join 'em—and learn where they're going. Because fighting doesn't pay off, terns, swallows, and other fork-tails gain more than they lose by associating in groups. Since members of the flock do not drive others away, all individuals can share in any one member's discovery of the next swarm. This becomes especially important at nesting colonies where an adult at its nest can watch a neighbor returning with prey and then follow it back to the feeding area. The smaller bills and smaller heads of forked-tailed birds also make them less able to defend their eggs and chicks against gulls, crows, and other nest invaders and so more dependent on the mutual protection of the colony.

So that's the story: from forked-tail silhouette to colonial behavior in four steps.

Or, at least that seems to be the story. A couple of loose strands stand out, I realize: Scissor-tailed Flycatchers, owners of the most spectacular split tails of all North American birds, don't seem sufficiently social (although they do sometimes gather together on their wintering grounds); and at least three of our most gregarious, aerial feeders—Cliff Swallow, Chimney Swift, and Vaux's Swift—all lack forked tails. Let me munch on this pretzel while I think about those exceptions to the rule. And don't forget to come back next week. ■

Most fork-tailed birds, including the Swallow-tailed Kite pictured here, habitually catch and consume their prey on the wing. Their prey tends to be relatively small—perhaps not worth fighting over.

ARTHUR MORRIS/BIRDS AS ART

SIDE BENEFITS

By Pete Dunne

Everybody knows about the front-end benefits of birding. Intellectual stimulation, aesthetic gratification, travel, exercise, fresh air. What with things like *Empidonax* flycatcher identifications to puzzle you and Prothonotary Warblers to swoon over, it's small wonder the side benefits are overlooked. Benefits . . .

Like being able to know the date without having to refer to a calendar. Any morning I choose, I can open a window, listen for a minute, and pinpoint the date (give or take a week or two). The backdrop of bird sounds chimes the season as accurately as the clock in our den chimes the hour.

Carolina Wren . . . Snow Goose—Happy New Year!

Carolina Wren . . . Snow Goose . . . CARDINAL—the last week in January.

Carolina Wren . . . Snow Goose . . . Cardinal . . . HOUSE FINCH—mid-February.

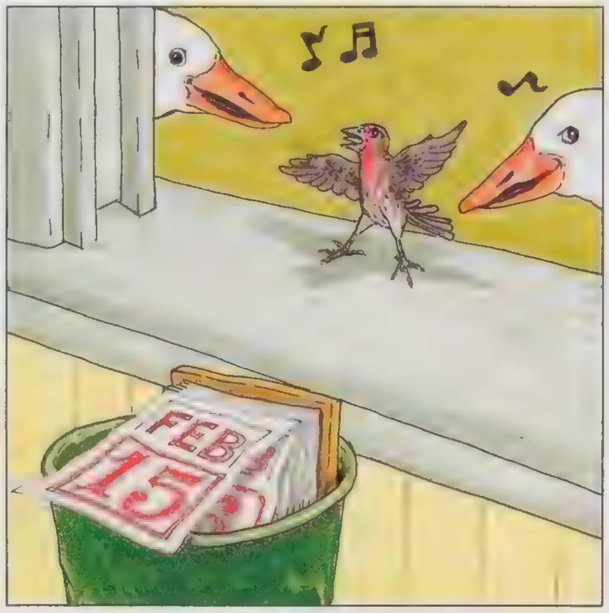
Carolina Wren, robin, cardinal, and NO SNOW GOOSE—April.

Think of all the money to be saved on calendars. Think of how amused that IRS agent is going to be when you explain that you missed the April 15 deadline because House Wrens were running late and Fox Sparrows were still coming to your feeder.

What about the avenue of interaction birding paves between you and North America's network of convenience stores? Do you know of any other avocation that confers a Rand McNally recall for the location of every Circle K store within a day's drive of Tucson or that makes WAWA a household word?

What's WAWA? In the language of the People of the Turtle, "goose." In the language of birders, "coffee, hoagies, and directions to Higbee Beach."

Speaking of obscure real estate, consider the intimacy birding confers with esoteric corners of the planet—creeks and canyons and strips of vegetation known only to birders and the odd cross-Gulf migrant or two. I recall an American Birding Association convention in which slides were presented of key birding spots. It was a contest. Participants had to guess the site.



We're not talking about portraits of Mt. Rushmore or Niagara Falls here. We're talking about photographs of canyons and bays, rocks and trees. We're talking esoteric.

And 500 people were shouting out the names in unison: "Cave Creek! Snakebight Trail!" The hotel staff thought it had been staged for their benefit. Ah, how fettered is the nonbirding mind.

Don't you love how, with drink in hand, nonbirding acquaintances will leave the party, stalk to your library, and peruse the titles to impress you with their literary finesse. Isn't it great how their eyes glaze over and the ice cubes rattle as they hit the recollection barrier—searching in vain for *Paradise Lost* or *The Brothers Karamazov* (the titles you keep on the shelf in the guest room) and finding instead *Population Ecology of Raptors* and *The Oscine Passerines,* vol. I.

"So, what do you think of Kaufman?"

"George Simon, the playwright?"

"No, Kenn, the birder. Hell of a sparrow man, ain't he?"

Speaking of impressing people, one of my few enduring recollections from college involves a nonbirding professor and a bird that intervened on my behalf.

It was spring semester, and I was flunking German. All of my hopes were pinned on the generous inclinations of Fraulein Instructor. But how was I to win her favor?

Then, one day (the first day it was warm enough to open windows) a gray bird with white flashes in its wings and tail started singing right outside the window, filling the classroom with song. The instructor stopped in midsentence and listened.

"Does anyone know what that bird is?" she pleaded.

"A mockingbird," I said. "Sort of the Nightingale of the New World."

"How beautiful," she marveled. "Do you know birds, Herr Dunne?"

"Oh, yes," I assured her. And while I would love to end this essay by saying that it was my knowledge of birds that got me a passing grade in German, thus demonstrating once again one of the many side benefits of birding, I cannot.

Even the benefits of birding have a limit. Although the linguistic skills of mockingbirds are impressive, they are also, sadly, nontransferable. ■

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LIVING BIRD

AUTUMN 1998 VOLUME 17 NUMBER 4

GREETINGS FROM SAPSUCKER WOODS

Iceland has always loomed large in my imagination. As a 14-year-old, I read Ernest Lewis's book, *In Search of the Gyrfalcon*—a chronicle of a trip the author took to Iceland in the 1930s to find nest sites of this imposing Arctic raptor. It was an impressive adventure. I remember thinking at the time, someday I'd like to visit Iceland and look for Gyrfalcons.

After many years of thinking about it, I finally had the chance to fulfill that dream this past June. I spent a week and a half with Icelandic ornithologist Olafur K. Nielsen and his Belgian field assistant, Dany Pierret, driving overland across northeastern Iceland—through lava fields and barren landscape, as inhospitable looking as the moon; across lush heathland; and along seaside highways, beside lofty cliffs—and hiking for miles, on the slopes of steep mountains and ancient volcanoes to check Gyrfalcon eyries and band their young.

The weather was awful, a photographer's worst nightmare: endless days spent waiting for the sun, while an icy wind blew steadily from the north, across the Arctic Ocean, bringing frigid weather, overcast skies, and the constant threat of sleet and snow. But, as Dany Pierret told me more than once, "It's Iceland . . . what did you expect?"

To read more about this amazing country and its birdlife, turn to page 16.

Tim Gallagher
Editor-in-Chief

Cover: The Everglades has always been known for its vast array of stately waders, such as this beautiful Snowy Egret. But wading bird numbers have plummeted drastically there in recent years. Why is this happening, and what is being done to reverse this disturbing trend? See the article on page 32. Photograph by Arthur Morris/Birds as Art.

Right: Now you see it, now you don't. The cryptic markings of this recently hatched European Golden-Plover chick blend in nearly perfectly with the vegetation on this Icelandic heath. Read "Iceland Journal" on page 16. Photograph by Tim Gallagher.

Back Cover: Breeding only in the Arctic regions of the world, the Gyrfalcon is the largest and mightiest of the falcon clan. To read more about this remarkable raptor, turn to page 16. Photograph by Brian E. Small.

8 THE ARTISTRY OF ARTHUR MORRIS *by Tim Gallagher*
From inner-city elementary school teacher to famed nature photographer in one easy (15-year) leap.

16 ICELAND JOURNAL *by Tim Gallagher*
Searching for Gyrfalcons and sunlight in the Land of Fire and Ice.

32 CAN THE EVERGLADES BE SAVED?
by Rachel J. Dickinson
After decades of mismanagement, this spectacular American wetland is still in jeopardy—but its future is looking brighter.

38 PASSING THE VISION *by Kristi G. Streiffert*
On tribal reservations across the nation, Native Americans are keeping alive their sacred tradition of respect for the land, creating effective conservation programs to protect wildlife and ecosystems.

Departments

4 LETTERS

5 BIRDNEWS

Columns

6 SPOTLIGHT *by David S. Wilcove*
Of Billabongs and Bobwhites.

44 PICTURE PERFECT *by Tim Gallagher*
Over There!

46 THE CATBIRD SEAT *by Pete Dunne*
Directions, Please.

LIVING BIRD

AUTUMN 1998 VOLUME 17 NUMBER 4

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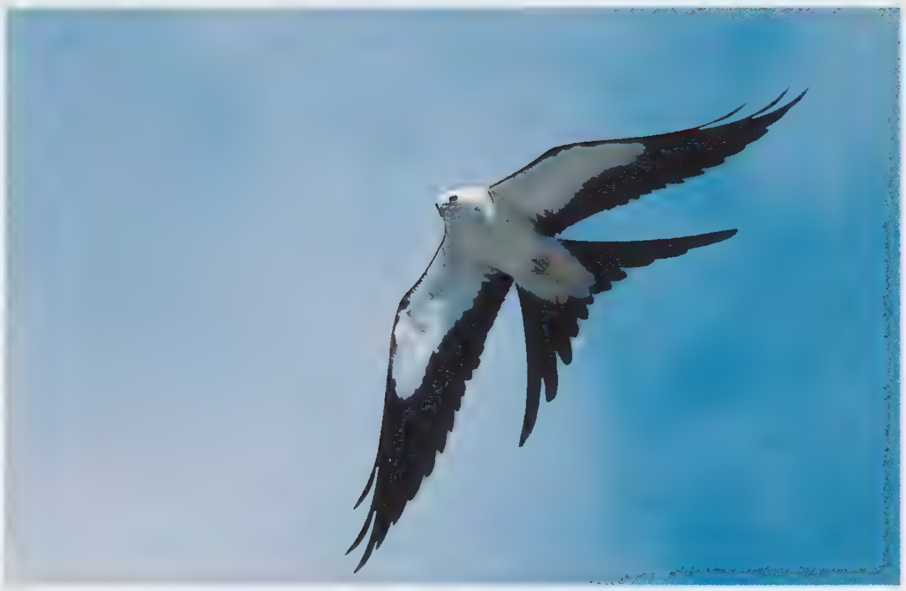
Letters


ARTHUR MORRIS/BIRDS AS ART

A Swallow-tailed Kite—at home in a type-free Florida sky.

AN UNNATURAL ENVIRONMENT

The Summer 1998 issue of *Living Bird* may be the best ever, pictorially speaking. I enjoyed all of the great photographs except one. Which one? The photograph of the Swallow-tailed Kite on pages 36 and 37, which had the text of the article wrapped around the bird's image. Please do not repeat such an act again. This beautiful bird deserves a better fate in the magazine. It would be swell with me if you reprinted it in its natural environment in the autumn issue.

Bob Clearwater
Fairfield Bay, Arkansas

FRIENDLY FLYCATCHERS

As soon as Jack Connor mentioned swallows, not flycatchers, when he spoke of scissor-tailed ("Why Fork-tailed Means Friendly," Summer 1998), I'd already thought of Scissor-tailed and Fork-tailed flycatchers. So far, I haven't found a description of these species' nesting behavior, but I've seen for myself the evening flocks of both species. I can think of no other flycatcher species as "flocky" as the Fork-tailed Flycatchers in Barranquilla, Colombia, and the Scissor-tailed Flycatchers in Managua, Nicaragua, during migration. The latter would hawk flies at dusk, their tails rippling with a noise like pennants in a breeze at a fair. Maybe there's a halfway stage of "friendliness" in these two flycatchers, feeding gregariously though not nesting communally.

Margaret Rusk
Syracuse, New York

A RECIPE FOR SUCCESS

Of all the bird magazines, *Living Bird* has become my favorite. By emphasizing biological process, mixed with some conservation, you are doing a great job with the magazine. Instead of the usual travel and identification articles, you are publishing articles with real substance—such as the "Snowbirds?" piece. Migration, ecology, entertainment, and wonderful photographs. The adult Phainopepla with the berry feeding its young was priceless. I hope more birders start to get into the process end of birding (as opposed to just identification and travel). I talk with lots of birders who want to know what the birds do, how they live, where they go, and how they get there. *Living Bird* has it.

Paul Kerlinger
New York, New York

We welcome letters from readers. Write to The Editors, *Living Bird,* 159 Sapsucker Woods Road, Ithaca, New York 14850, or send e-mail to <livingbird@cornell.edu>.

Kidnapped

As birding becomes ever more popular in the United States, Americans in record numbers are flocking to faraway places, hoping to add more birds to their life lists. Bird magazines are full of tour ads to the wildest, most exotic locations on the planet. Africa, Antarctica, Borneo, Siberia—almost anyplace you can think of is now visited routinely by birders. But many people have begun asking: how safe is it to visit these places? If the country in question is Colombia, the answer is: not very safe. Just ask the four American birders who were snatched by rebels and held for ransom in that country this past March. The story of their ordeal is a harrowing tale that points up the potential perils of traveling in remote regions of developing countries.

The four avid birders—Peter Shen, 35, and Tom Fiore, 42, of New York City; Todd Mark, 33, of Houston, Texas; and Louise Augustine, 63, of Chillicothe, Illinois—had flown to Colombia together on March 19, hoping to take advantage of the country's spectacular array of birdlife on a whirlwind four-day birding excursion. On the final day of their brief trip, they made an all-out effort to find a Cundimarca Antpitta—a bird that had only been discovered in 1989.

After leaving the capital city of Bogotá well before dawn, the foursome drove south toward the lush rainforest of the eastern Andes, eventually turning off at a quiet road that wound up into the mountains. This, they had heard, would be the best place to search for this small, elusive brown bird. They had been driving slowly upward for several miles when, suddenly, a parked truck loomed ahead in the early dawn light, blocking the road. A moment later, more than a dozen armed men, shouldering automatic weapons, surrounded their car. Their nightmare had begun.

The men, it turns out, were guerilla fighters with the Fuerzas Armadas Revolucionarias de Colombia. The birders—who like birders everywhere rise earlier than anyone else—had unwittingly stumbled upon them as they were preparing an ambush. The guerillas seized their money, passports, and equipment, and drove the four high into the mountains in another truck. When heavy rain made it impossible to drive any farther, the birders were forced to slog the rest of the way to the guerilla camp on foot.

The following day, 19 more prisoners arrived there. The guerillas had botched the ambush the day before and had fled in a hail of bullets as government troops and aircraft attacked them, taking hostages as they ran. Four people had been killed in the fight. One of their captors told the birders that five million dollars would have to be raised to ransom them.

A few days later, the Americans and several other captives were taken on a forced march deeper into the mountains. During a rest stop one day, Tom Fiore managed to slip away from the group and make his way back to civilization. The guerillas sent out a search party for him. When they returned, they lied, saying they had killed him and that anyone else who escaped would face the same fate.

The march continued. And then, almost two weeks into this terrible ordeal, Louise Augustine slipped while hiking along a ridgetop and rolled several hundred feet down a steep hillside, breaking some ribs and fracturing her pelvis. An Italian businessman who had been captured at the roadblock was released a few days later, on April 15, and brought word of Augustine's severe injuries. Apparently this disclosure embarrassed the guerilla leaders and so, on April 24, Augustine was delivered to a waiting Red Cross truck, after being carried overland by stretcher for several hours. It turned out that, in addition to her other injuries, she had a collapsed lung and probably would not have survived much longer without medical treatment.

FERNANDO LLANO/AP WIDE WORLD PHOTOS

Just before their rescue, Todd Mark (left) and Peter Shen (center) hide with a television camera crew during a mortar attack by Colombian troops.

The following day, the remaining two birders, Todd Mark and Peter Shen, were marched down the mountain to the same location, where they were surprised to see reporters and a camera crew interviewing a guerilla leader. As they stood there in the steaming tropical heat, they suddenly found themselves scrambling amid a barrage of mortar fire as Colombian army troops attacked. The guerilla force fled immediately as the reporters and the two birders hit the deck and crouched behind cover. But when the firing stopped, their ordeal was over. After more than a month of captivity, they were free.

— *Tim Gallagher*

OF BILLABONGS AND BOBWHITES

By David S. Wilcove

Déjà vu in the Australian Outback

As a fledgling bird watcher, I regularly attended field trips sponsored by the Buffalo Ornithological Society. I remember one autumn day in which we saw nothing special at a time and place where, according to the logic of a very disappointed 13-year-old, all sorts of rare and unusual birds should have been. What made that particular day memorable was the parting advice of the trip leader, a venerable graybeard of western New York ornithology: "Sometimes it's as interesting to think about the birds you didn't see as it is to think about the ones you did." At the time, I wanted to punch him.

Last fall, his words came back to haunt me, when I found myself on the worst bird-watching trip of my life. A group of us from the United States had arranged for an Australian bird watcher to take us on a 10-day journey into the legendary Outback. Our Aussie leader, who shall remain nameless, was not a professional tour guide, but he was a talented amateur with a keen knowledge of the eastern Australian avifauna. Our plan was to head due west from Brisbane toward the Sturt Desert, where the states of Queensland, New South Wales, and South Australia converge, then travel north toward the Beal Range, before returning to Brisbane. In theory, this itinerary would enable us to see some of Australia's rarest and most elusive birds.

In reality, it did nothing of the sort. A typical day began at dawn as we piled into the Land Rover to drive as quickly as possible to the birding site we had failed to reach the previous day. Arriving at midafternoon, we would spend an hour or two in the intense desert sun searching for birds that were nowhere to be seen before piling back into the Land Rover for another four-hour drive that brought us closer to, but never precisely to, our intended destination. In this manner, we managed to spend at least three-quarters of our time in the vehicle, bouncing over endless miles of dirt roads, through one of the bleakest landscapes I have ever seen. The number of birds we didn't see far exceeded the number we did. Missing in action were Grey Falcon, Plains-wanderer, Cinnamon Quail-thrush, Grey Grasswren, Striated Grasswren, Banded Whiteface, Desert Chat, Orange Chat, Yellow Chat, and many, many others.

I tried to be a good sport—I really did. I tried to focus on the good moments, enjoy the birds we did see, and study the landscape (when I wasn't stuck in the middle seat in the back of the Land Rover). But the truth of the matter is that the trip was a bust, and no amount of positive thinking could change that fact. We had driven approximately 2,800 miles in nine days with precious little to show for our efforts.

When it was over—and after we had quenched our thirst for Australian birds in other, birdier parts of the country—I began to wonder why we had failed. One obvious factor was that we had spent far too much time in the car and far too little time afield. Yet, it's impossible to see a good selection of Outback specialties without driving immense distances. The birds are extremely patchy, scattered here and there across an immense region. (Such is the case with many desert birds, not only in Australia but throughout the world. How many American bird watchers do you think would have Le Conte's Thrasher on their life lists if it were not for today's bird-finding books with their meticulous directions to known locales?)

A more serious problem was our lack of precise information. Our guide knew the general locations where our target birds occurred but not the precise water holes, *spinifex* patches, or dunes they inhabited. Had we been prepared to spend nine weeks instead of nine days in the field, we surely would have stumbled upon several of the birds we missed—perhaps even discovering some new sites for a few of them—but a brief trip like ours allowed no room for error.

Finally, a number of Outback birds are difficult to find because they have become exceedingly rare over the course of this century. At least eight species are included in BirdLife International's authoritative compilation of imperiled species, *Birds to Watch 2.* Prior to my visit, I could not imagine why so many birds were in trouble in one of the wildest, least-settled regions of the world. Now I think I understand. The Outback may not be densely populated, but much of it has been extensively altered by people and their companions. Everywhere we went, for example, we saw cattle and sheep, barbed-wire fences, and cow pies. In this delicate, arid environment, where the largest native grazers are kangaroos and Emus, the introduction of millions of cattle and sheep (not to mention rabbits) has caused funda-

ILLUSTRATION BY JOHN SCHMITT

mental changes in the composition and structure of the vegetation. Even a small amount of overgrazing in a drought year can be enough to eliminate the native grasses.

A wild, unsettled region overrun with livestock at the end of the 19th century? Birds vanishing because of overgrazing? Something about this story seemed vaguely familiar. And then it dawned on me: we could be talking about Arizona. In the 1870s and 1880s, at a time when Arizona was part of the American frontier, stockmen turned a million or more head of cattle onto the open range. Overgrazing quickly destroyed the arid grasslands, causing populations of a variety of birds to crash. Among the most famous victims of the cows was the Masked Bobwhite. This distinctive race of the Northern Bobwhite was once common from the Baboquivari Mountains east to the Upper Santa Cruz Valley and south into Mexico. By the early 1900s, when Carolina Parakeets and Ivory-billed Woodpeckers were still around (albeit headed for extinction)—Masked Bobwhites had already vanished from the United States. They had also declined in Mexico (where overgrazing is a problem, too) but, fortunately, a small population managed to survive there. These Mexican birds were used to establish a captive population in the United States, under the auspices of the U.S. Fish and Wildlife Service (USFWS).

For many years, the USFWS has been trying to restore a wild population to southeastern Arizona by releasing birds from the captive flock. Until recently, the program met with little success, in large part because the agency could not find any grasslands in Arizona that weren't being grazed by cattle. In 1985, the USFWS purchased the magnificent Buenos Aires Ranch as a permanent release site and then took the courageous step of removing all of the cattle before releasing any bobwhites. Local ranchers howled in protest, but the decision appears to have been the right one. Several hundred Masked Bobwhites now roam the golden, ungrazed grasslands of the ranch, and some of them are even breeding on their own. The cattlemen, however, have never abandoned their belief that cows, not bobwhites, rightfully belong on what is now the Buenos Aires National Wildlife Refuge. They continue to lobby the USFWS and their representatives in Congress to restore grazing to the refuge—a step that would surely mean the demise of the birds. As that now-deceased bird watcher in Buffalo might have said, it comes down to a choice of which animals you don't want to see: bobwhites or bovines. ■

Further Reading

John Alcock, *The Masked Bobwhite Rides Again* (Tucson, AZ: University of Arizona Press, 1993).

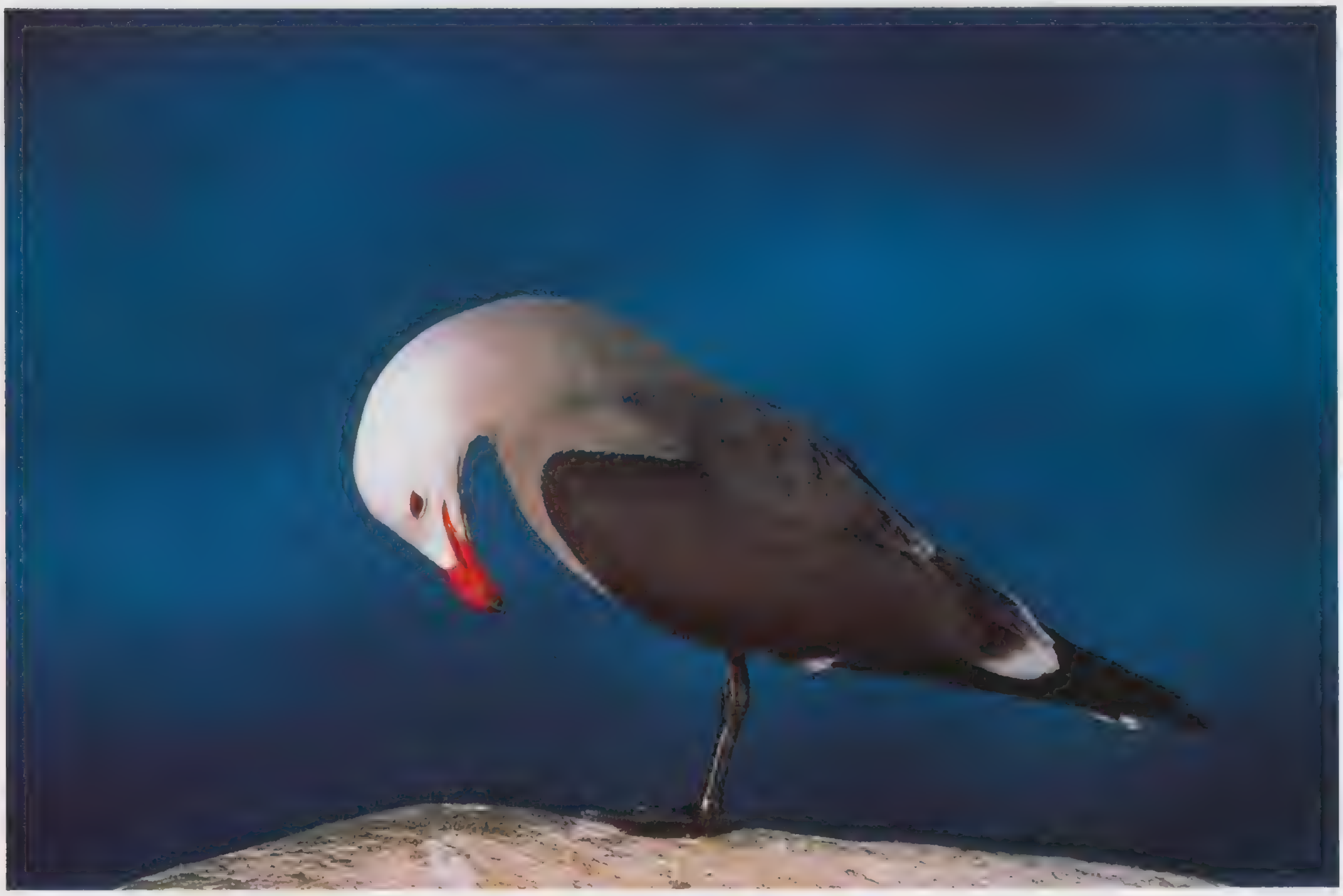
N.J. Collar, M.J. Crosby, and A.J. Stattersfield, *Birds to Watch 2: The World List of Threatened Birds* (Washington, D.C.: Smithsonian Institution Press, 1994).

The Artistry of
ARTHUR MORRIS

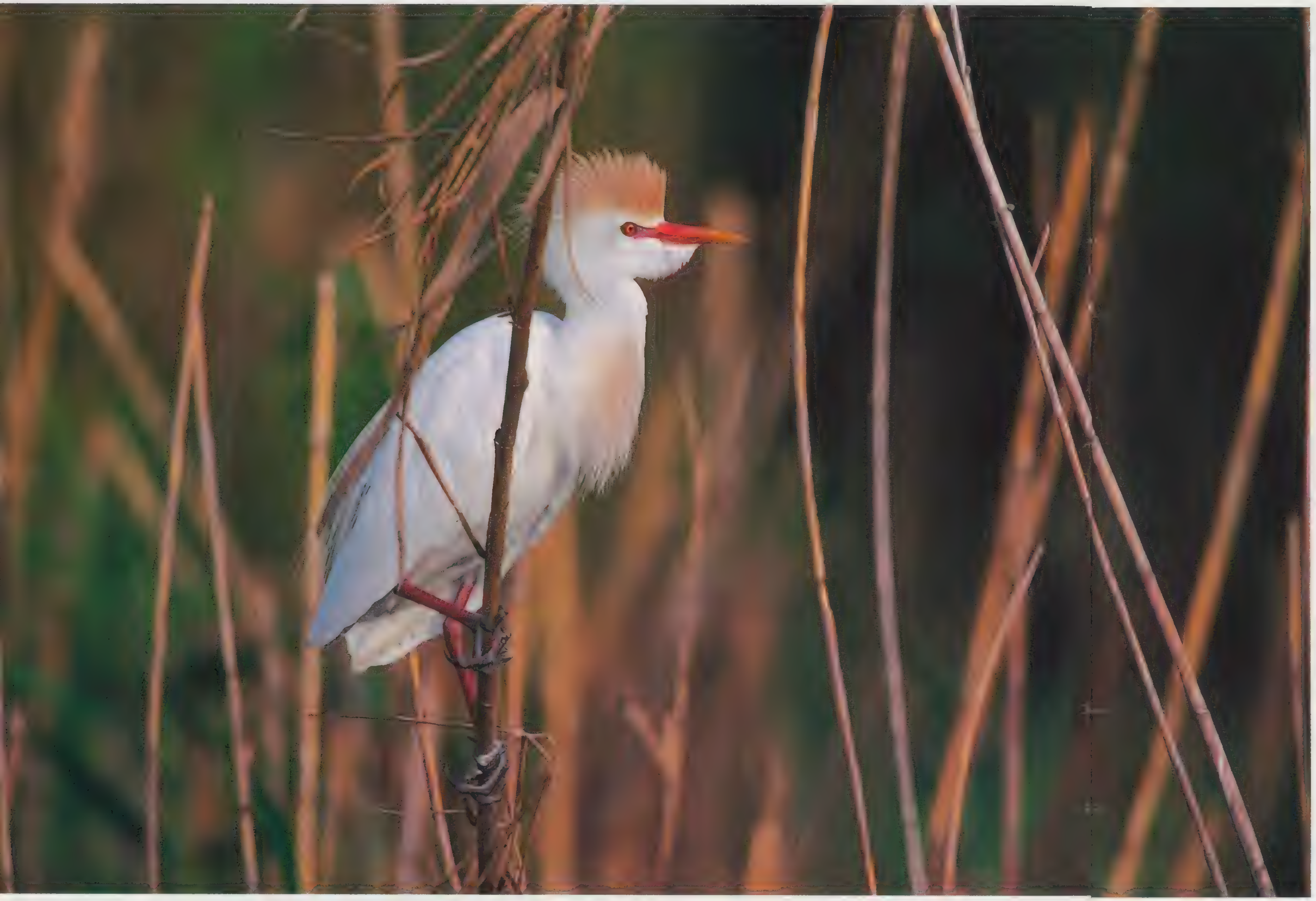
By Tim Gallagher
Photographs by Arthur Morris

From elementary school teacher to famed nature photographer in one easy (15-year) leap

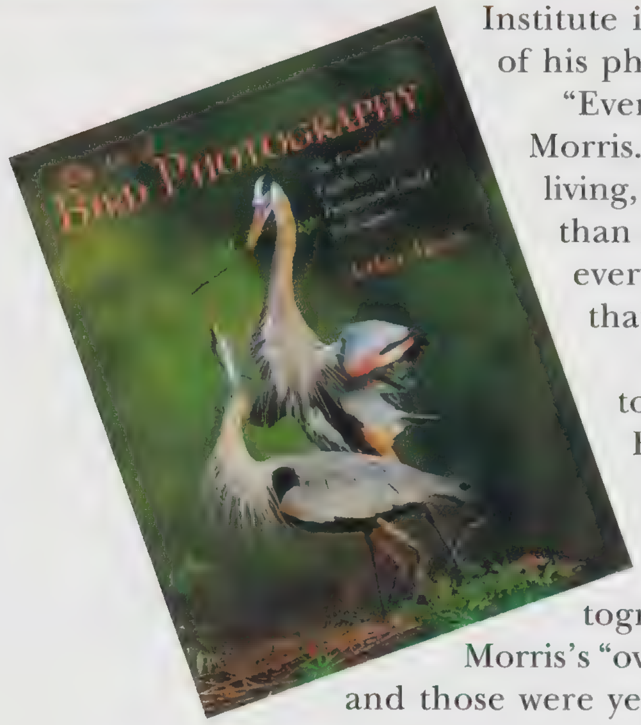
Things have never looked better for Arthur Morris. Riding high, at the top of his game as a nature photographer, his work is appearing in magazines and other publications around the world; his latest and most ambitious book, *The Art of Bird Photography*, is just hitting the bookstores, amid rave reviews; Canon, manufacturers of the photographic equipment he uses, has been sending him to faraway places like Mexico and Alaska to make television programs; and, most exciting of all to Morris, the Roger Tory Peterson



This Willet (left) had young nearby and would continually fly from its lookout perch to confront passing beach-goers and then return almost immediately, presenting Morris with a chance to make numerous spectacular images. The lines of its body, the curve of its neck, and the background of deep Pacific blue all contribute to the artistic success of the Heermann's Gull image (above).



This Cattle Egret in breeding plumage (above left) provided a gorgeous subject for Morris. Though he says the image is not the three-quarter-frame shot that he was after, he likes the reeds in the background and the soft quality of the light.



Institute is planning a major exhibit of his photographs.

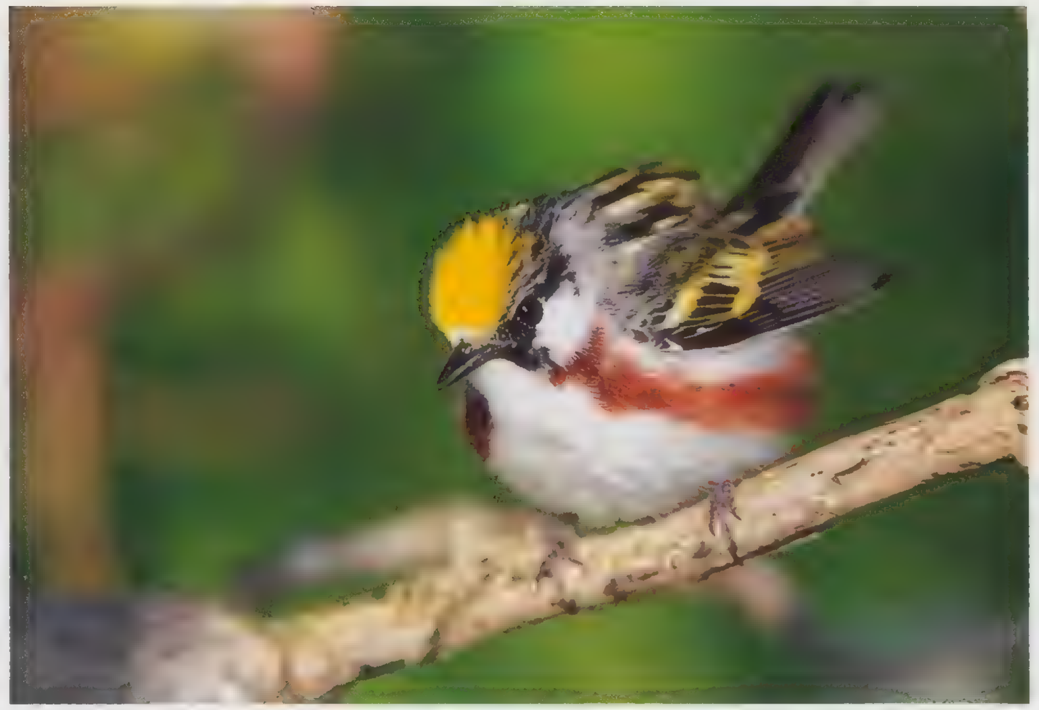
"Everything's going great," says Morris. "I'm making an amazing living, doing what I love to do more than anything else. I'm thankful every day, and I feel so lucky that it's beyond belief."

So, how did a teacher at a tough elementary school in Brooklyn switch careers in midlife and become an overnight success in the competitive field of bird photography? The answer: Arthur Morris's "overnight" rise took 15 years—and those were years spent slogging through muck, mire, and biting mosquitoes, carrying a crushing load of camera gear.

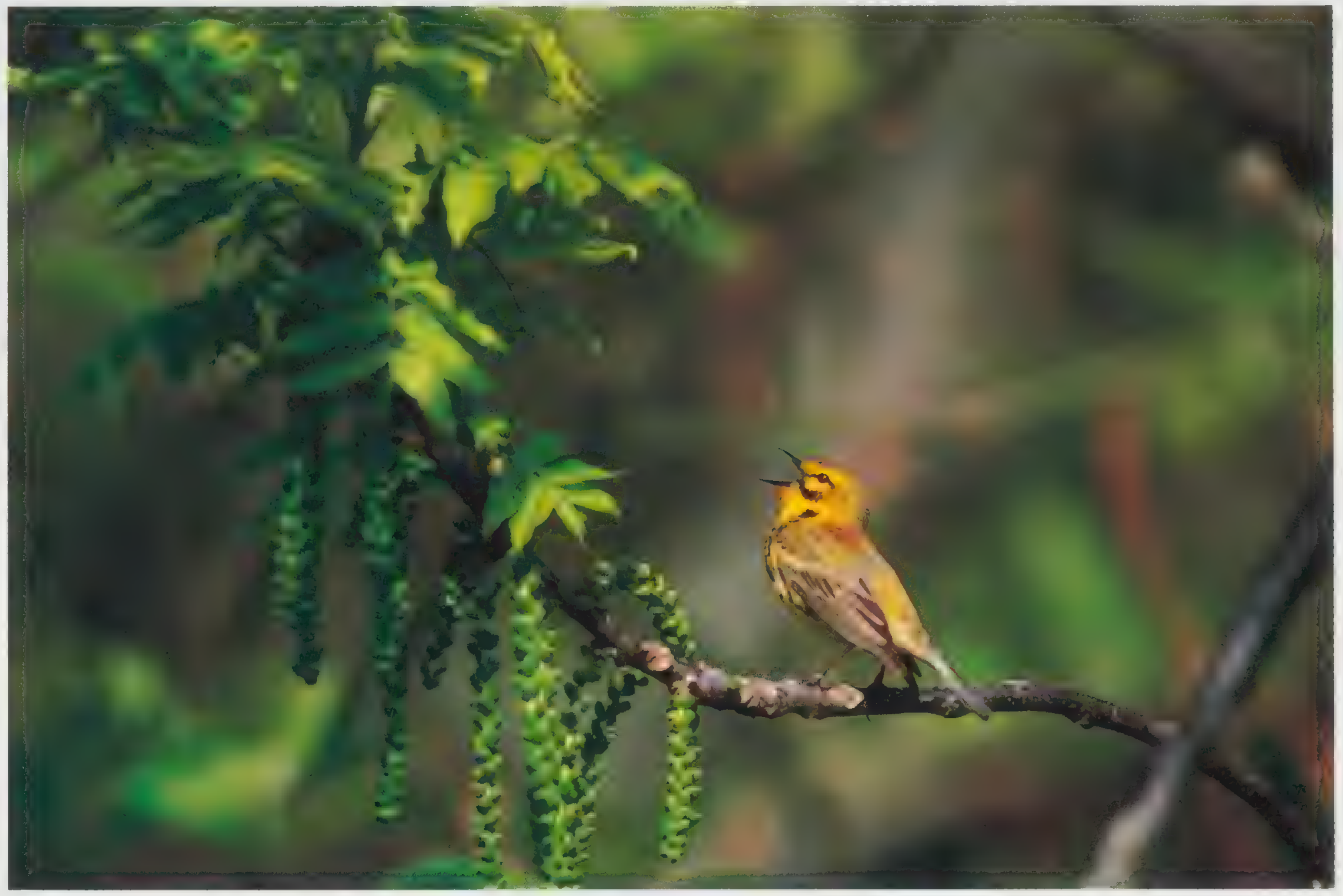
"I work very hard at what I do, and I'm very proud of what I've accomplished," says Morris. "But anybody could do it. That's the point of my new book. All you have to do is be willing to get up before dawn, lug around 30 pounds of equipment, and do that almost every day for 15 years."

Morris likes to point out that he's had no formal training in photography, art, or ornithology. "I only took one course in photography," he says, "two hours a night, every Tuesday for eight weeks." But his "on the job" training in these fields certainly more than makes up for any classroom deficit, and he's willing to share in his books, lectures, and tours the knowledge he's gained through his years of direct experience. Morris's 23 years as an elementary school teacher have also helped prepare him for his role as mentor to budding bird photographers. "If you can teach long division to inner-city fourth graders who are two years behind in reading, teaching people about photography is a piece of cake," says Morris. "It's just a matter of breaking down the steps and making things easier to understand." And Morris is an effective instructor. Both his writing and his in-the-field instruction are clear and concise.

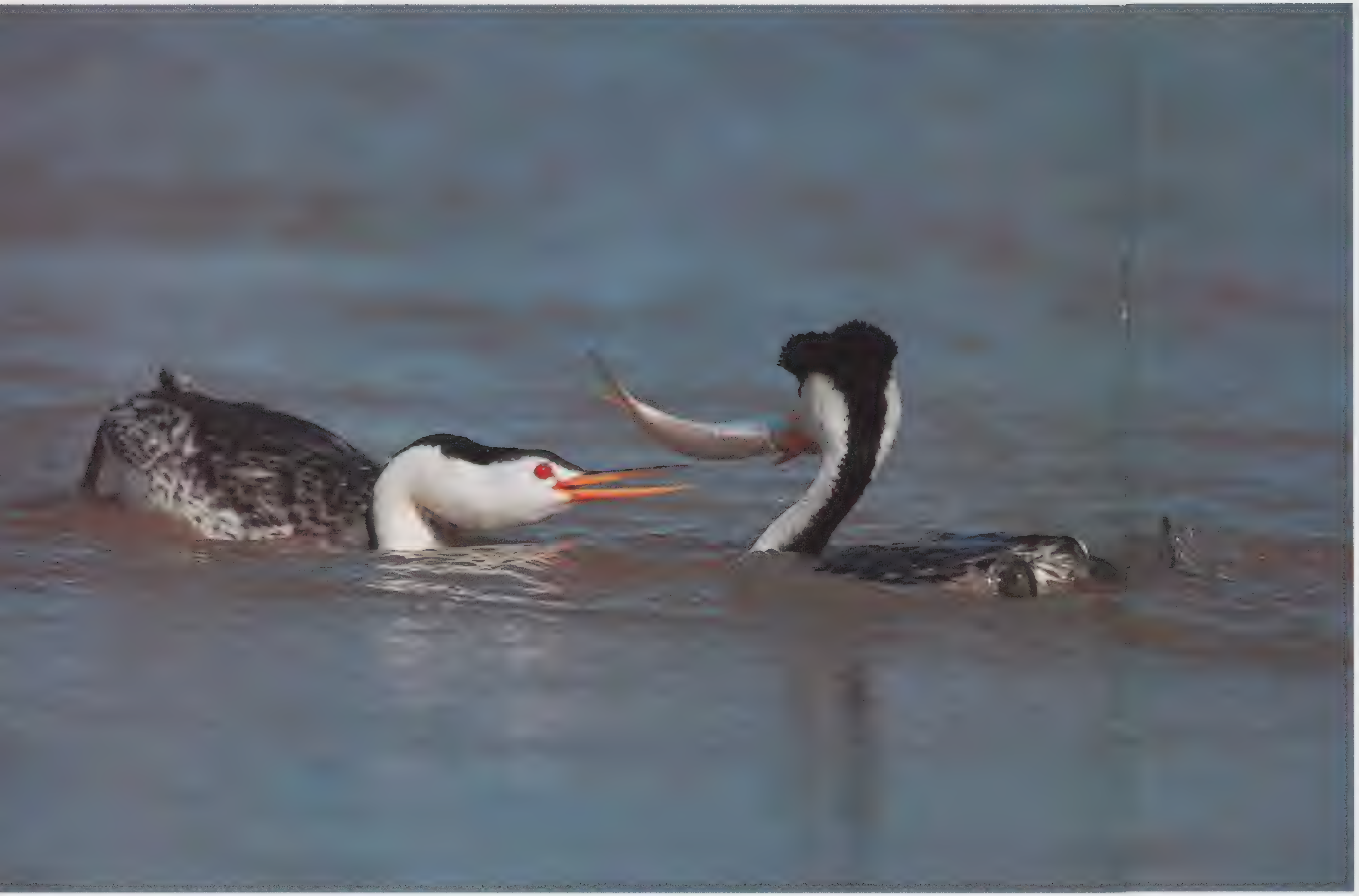
For many years, Arthur Morris juggled his teaching career with his bird photography. He would leave home before dawn each morning and be at Jamaica Bay National Wildlife Refuge as the sun rose. After barely an hour of photography, he would rush home, pick up his wife, Elaine, speed to P.S. 106 (the elementary school where they both taught), and be in class ready to teach by 8:40 A.M. As soon as school ended each afternoon, he would rush back to either Jamaica Bay or Jones Beach and

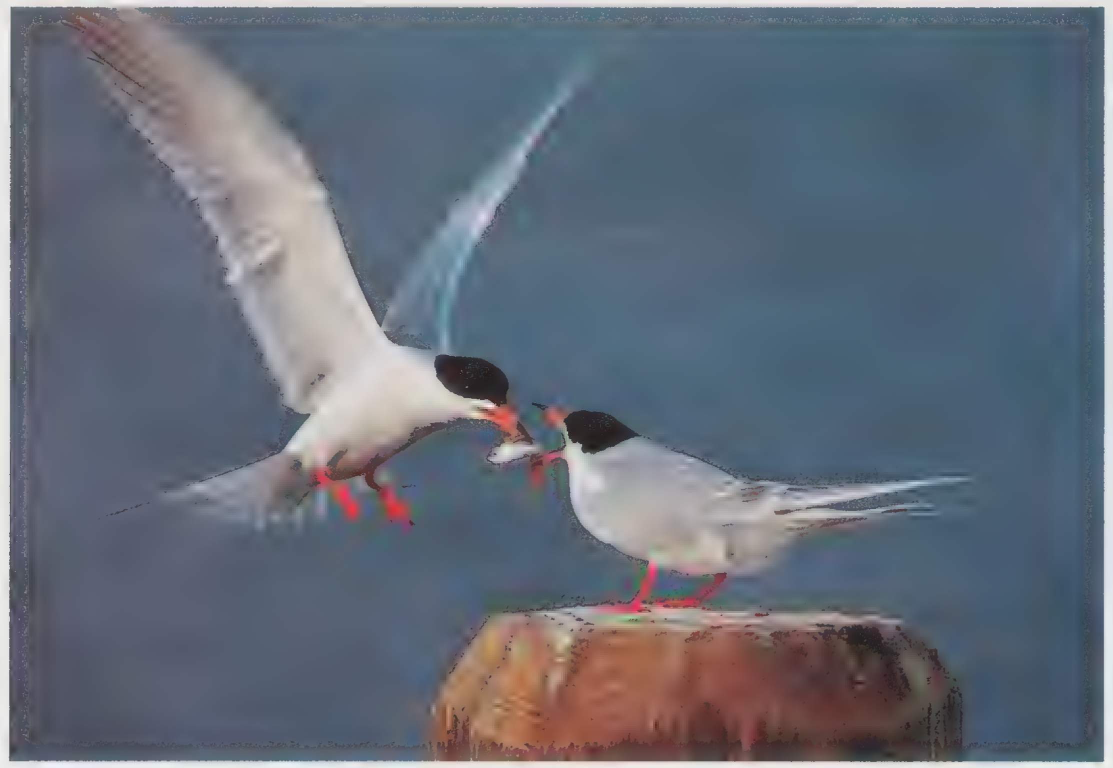


To photograph quick-moving subjects (such as this Chestnut-sided Warbler) as they flit from branch to branch through the dappled light of a forest, Morris carries 40 pounds of equipment into the field. He uses a Canon EF 600mm f/4.0L lens, an EOS 1N body (in AI Servo AF mode), a 1.4X teleconverter, EF 12mm & 25mm extension tubes, a 540 EZ flash, a Better Beamer flash extender, a Quantum Turbo Z battery pack, a Really Right Stuff quick release plate and flash arm, a Gitzo 1548 carbon fiber tripod, and an Arca Swiss B-1 ballhead.



The stunning image of a singing male Prairie Warbler (above) is not typical of Morris's style. His pictures more often feature a bird set against a background of pure color. But here, the surrounding vegetation provides a beautiful and interesting backdrop. The next frame in the series, he says, depicted only a quivering branch. Far left, the cover of his latest book.





To Morris, capturing an image that depicts two birds interacting is the ultimate challenge. As part of the age-old ritual of courtship, a male Clark's Grebe (above left) at California's Salton Sea and a male Forster's Tern (below left) at Bunker Pond in Cape May, New Jersey, both feed fish to their mates.

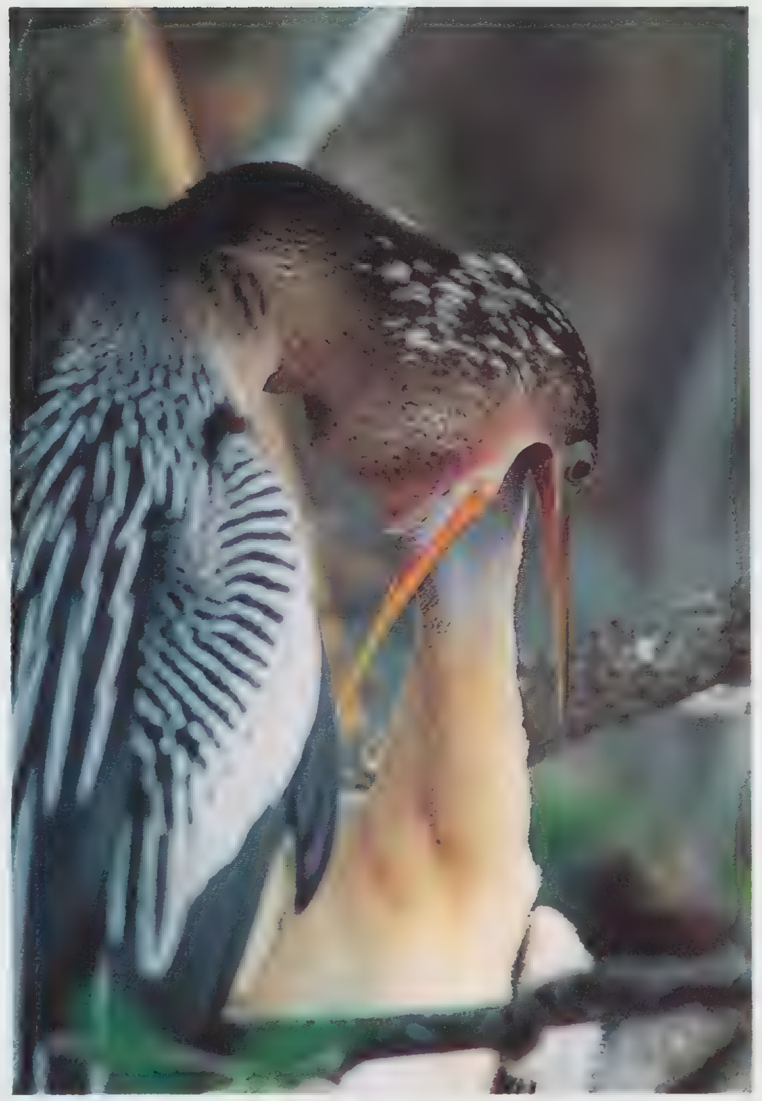
resume photographing birds. It was a tough existence, but one that he loved.

Finally, in 1992, he convinced Elaine that they should leave their teaching careers and spend their lives traveling in a motor home, photographing birds. Together they crossed North America twice in the ensuing year, hitting many of the continent's great birding spots—High Island, Texas; Point Pelee, Ontario; and others. It was an idyllic time for them. "We had fun every day and reveled in our love for each other," says Morris. They even stopped at the Lab of Ornithology, where they spoke enthusiastically with me about their life plans and showed me an impressive array of photographs.

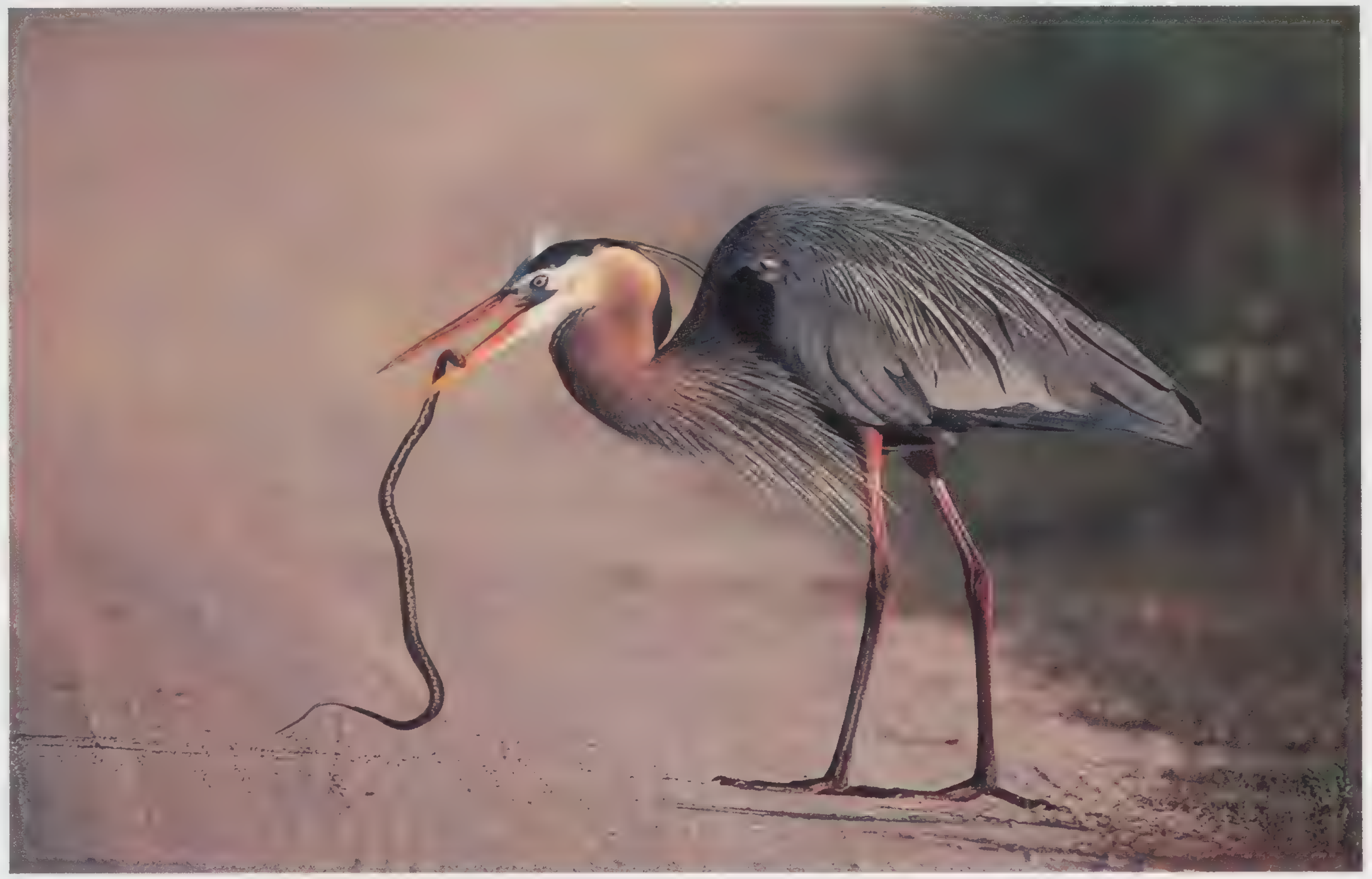
But when they got back home a few months later, Elaine seemed to have an inkling that the life they were living might be too good to be true. "We'd better watch out," she told him. "Things are too perfect." Just a couple of days after that, Elaine found a lump in her breast and barely 14 months later, in November 1994, she passed away peacefully at their home in Florida.

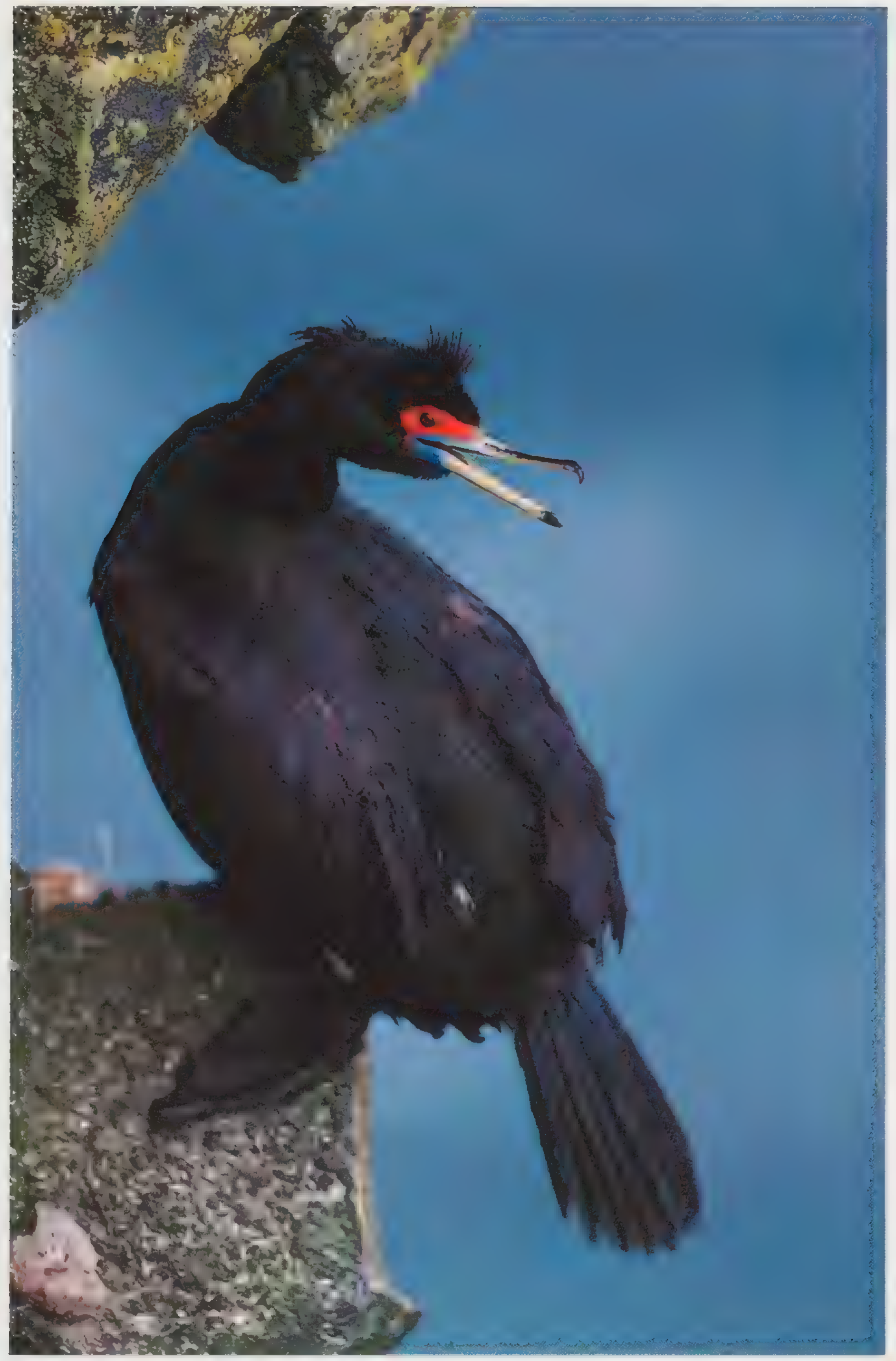
"Losing my wife, my love, and my best friend was devastating," says Morris. The only way he could cope with his wife's death was to immerse himself totally in his photography career. "Without bird photography in my life, losing Elaine would most likely have destroyed me," he says. A short time later, he went to Bosque del Apache National Wildlife Refuge in New Mexico for the first time and spent several weeks there, taking pictures of vast flights of Snow Geese and Sandhill Cranes and the incredible scenic vistas that the area held. It was a healing time for him, and he came back refreshed, with a renewed vigor and enthusiasm for his photography that hasn't let up yet.

Now, less than five years later, Morris is making more money as a bird photographer than he ever dreamed possible. His tour business is booming, picture sales to books, magazines, and calendars are soaring, and major companies are using his photographs in advertising campaigns. He has had three books published, *Shorebirds: Beautiful Beachcombers* (North Word Press, 1996), *Bird Photography, Pure and Simple* (self-published through the Tern Publishing Company, 1997), and the aforementioned *Art of Bird Photography* (Amphoto, 1998). He has gone from a $9,000 loss in his



Morris often uses extremely powerful telephoto lenses to get close-up images without disturbing the birds. A Canon FD 800mm f/5.6L was the lens of choice for photographing an Anhinga feeding a nestling (above). To attain a decent-sized image of this Great Blue Heron with a snake in its bill (below), Morris added a 2X teleconverter to his 600mm f/4 lens, transforming it into a 1200mm f/8 setup.





Though it was wet and foggy most of the time he was there, Morris says that the trip he took to Alaska's Pribilof Islands with friend and colleague Moose Peterson this past summer was one of the greatest thrills of his photographic career. This Red-faced Cormorant (left) shared Reef Wall on St. Paul Island with Horned and Tufted puffins; Parakeet, Least, and Crested auklets; and a family of Winter Wrens.

This Snowy Owl image—made more than 15 years ago at Jones Beach on Long Island, New York—has withstood the test of time and is still very salable. Morris said he took the shot with his first telephoto lens: a Canon FD 400mm f/5.6. Despite the fact that the picture was taken without a tripod and his hand was shaking with excitement as he pressed the shutter-release button, he came up with five sharp images of the owl.

Morris took this appealing portrait of a young Black-necked Stilt at Bolsa Chica—a wetlands in Southern California that was saved after a long battle with developers. Morris points out that photographs of wildlife like this are often used to garner public support for conservation efforts—and the cuter the subject the better.

photography business in 1993 to a current six-figure annual gross income.

When asked what other aspiring bird photographers could do to emulate his success, Morris replies that the most important thing is a person's determination. "All the skills can be learned," he says. "With time and effort, anyone can take good bird photographs, but if you want to succeed commercially and make this your main business, it takes an amazing amount of drive. Galen Rowell once wrote that the size of the rat in a photographer's belly, gnawing at you to succeed, determines how far you can go in this business. No one's ever said it any better than that."

Morris advises new photographers to get together 10 or 12 excellent images that are tied together with a common theme, write an article, and send the package to an editor. "I know that the standard advice for newcomers is to send a query letter to an editor first," says Morris. "But if they've never heard of you, there's no way they're going to give you an assignment, no matter how good your idea or your images are. When I was starting, I sent a manuscript and photographs to *Birder's World*, and they bought it. I guarantee if I'd sent them 10 queries I'd have been wasting my time."

Aspiring bird photographers could not have a better or more inspiring role model than Arthur Morris. "Every day I wake up smiling," says Morris. "I can't believe how lucky I am to be doing what I love most in life, creating beautiful pictures of birds." ■

ICELAND JOURNAL

Text and Photographs by Tim Gallagher

SEARCHING FOR GYRFALCONS AND SUNLIGHT IN THE LAND OF FIRE AND ICE

21 JUNE 1998; REYKJAVÍK, ICELAND: Waiting at a tiny bus station in Reykjavík, I feel like someone who has arranged to meet a blind date but forgot to ask what the person looks like. I know nothing about Olafur Nielsen's appearance. We've been sending e-mails back and forth for several months while setting up the details of my trip to Iceland, where I'll accompany him as he conducts field research on Gyrfalcons. But neither of us thought to ask for a description of each other or to arrange for a visual clue, like "Look for the guy with the Gyrfalcon feather stuck in his hat." I know only that Olafur is a native Icelander, about my age, who received a Ph.D. in ornithology from Cornell University in the mid-1980s (working as a graduate student with former Lab of Ornithology researcher and Peregrine Fund founder Tom Cade), and that he is now an animal ecologist at the Icelandic Institute of Natural History in Reykjavík.

The land is rugged, with miles of jagged volcanic rock, making it difficult to climb to more than two or three nests a day.

In the waiting room, a dozen or more Icelanders sit—some in silence, staring out the window or quietly puffing on cigarettes, others engaged in lively conversations. I try listening to them, hoping to get an idea of what they're saying. I've studied French, Latin, Anglo-Saxon, and some German during college and high school; I figure I should be able to pick out an occasional familiar word. Nothing. They may as well be saying "blah, blah, blah, blah." The only thing I can make out is that their sentences are punctuated occasionally with a word that sounds like "yow," which seems to be some kind of affirmative, like "yeah."

Then I see two men, both in their early forties, enter the room—a tall, thin man with glasses and graying hair and another, shorter man, with longish ginger-brown hair and the scruffy start of a beard. They split up and walk around the room, looking closely at each person. But they go right past me like I'm invisible. Instead of taking a direct approach and asking who they are, I pull out a field guide and open it to a color plate of a Gyrfalcon. The shorter of the two grabs the other by the sleeve and points at me. "Are you Olafur Nielsen?" I ask, resisting the impulse to say, "Dr. Nielsen, I presume." The taller man says yes and we shake hands. He introduces the other man as his field assistant, Dany Pierret, a Belgian who's been living in Iceland the past two years.

It's amazing how quickly we get down to the business of the trip. After having coffee at Olafur's house with his wife, we whisk away to the nearby domestic airport and catch a one-hour flight to Akureyri, in northeastern Iceland, pick up a four-wheel-drive truck owned by the institute, load up on supplies, and are on our way into the hinterlands. Less than two hours later, we're driving up a steep, rocky hill en route to a Gyrfalcon eyrie. Before we get there, though, we stop at a sheep farmer's house; the tiny dirt road leading to the eyrie runs right past his yard and through his sheep pens. As he comes out his front door, he seems genuinely pleased to see Olafur. "Blah, blah, blah, blah?" he says. "Yow, blah, blah, blah, yow," Olafur replies.

Though the man has the thick, dark brown hair of a young man, his face looks ancient. Later, as we drop in on more and more of these sheep farmers in the course of our trip, I see that many of them have that same general look: great hair, wrinkled faces. Whether they are young men whose faces have been battered and shriveled by harsh weather or old men whose hair has been miraculously preserved, I have no idea. Olafur talks to the man for perhaps 30 minutes. This, I also soon find out, will be the routine most places we go. Even in remote areas, a sheep farmer's land is often the gateway to Gyrfalcon country. If we're lucky, a brief chat with the landowner is all we need to get past his farmhouse; if we aren't so lucky, we might have to spend a couple of hours drinking coffee and listening to the rhythmic patter of these, for me, incomprehensible Icelandic conversations.

We finally leave the farmer and drive for several miles. When we reach a point where the boulders and sharp volcanic rocks make it impossible to drive any farther, we park the truck and make our way on foot up a steep hill to get above the nest—on a rock ledge high on the side of a narrow gorge with a swift-flowing river running through it. Carrying a backpack full of heavy camera gear and a tripod, I huff and puff my way up the slope, 20 feet behind Olafur and Dany, who are practically running. (I guess sitting at a computer and taking a stroll through Sapsucker Woods once a day is a poor preparation for this level of physical activity.)

Gyrfalcons almost always nest on cliffs, usually

Visiting many of the Gyrfalcon nests involves making long hikes overland, across lava fields from centuries-old volcanic eruptions. Above, Dany Pierret uses binoculars to check an eyrie cliff on the far side of a glacial river. Far left, the adult female Gyrfalcon watches intently from a perch near her nest.

the higher the better, giving them a commanding view of the surrounding area. They tend to lay their eggs on grassy ledges or in stick nests built by ravens in previous years. The falcons never build a nest, though they may make a small scrape in the soft earth or gravel of a ledge to hold their eggs. Getting to a Gyrfalcon nest, or eyrie, usually involves making a precarious climb to the top of the cliff and then rappelling down a rope to the nest ledge.

As we reach the top of the cliff, an adult female Gyrfalcon makes several power dives at us, screaming harshly as she flies past within 10 feet of us. Despite the roar of rushing water, her voice echoes through the canyon, sounding like a rusty pump broadcast over a public address system. The male—a pale, silver-gray beauty—sits on a grassy slope across the river, screaming from afar.

Dany unfurls the climbing rope, ties the end around his waist, and throws the rest of it over the cliff. He then sits down, becoming a human anchor for the rope. Olafur tells me he will band the young falcons inside the nest, instead of bringing them down and having to climb the cliff again. At the bottom of the cliff, there's no place to stand—it ends right in the river—so Olafur will swing out over the water and come down on the other side. I'm not sure exactly how he intends to get back, but I nod and get ready to snap some pictures of him, though the freezing wind and dark skies are lousy conditions for photography. Olafur hands me a walkie-talkie encased in a waterproof pouch with a rope to hang it around my neck and then disappears over the cliff.

Looking down the cliff, I think back on the times as a teenager when my best friend Mac—just as I was backing off a cliff to rappel to a Golden Eagle eyrie—would tell me a make-believe newspaper headline: "Boy, 16, falls to his death at eagle nest."

After 15 or 20 minutes, Olafur radios that he's at the bottom on the other side, and we should pull up the rope. It's difficult to hear over the river noise. It sounds like he's saying that I should make my way to the edge of the water, moving down the steep talus slope in a break in the cliff, and dangle the end of the rope downstream until it reaches him. I ask him to repeat the message to make sure I'm hearing him correctly. "I think he wants me to drag him across the river with a rope," I tell Dany. "Does that seem right to you?" Dany looks blank and shrugs.

Hoisting the rope over my shoulder, I start toward the river. The rocks underfoot are small, sharp, and loose—completely broken. I try to hold the sides as I go down, but I slip a couple of times, sending an avalanche of small rocks tumbling and plunging into the icy river. The loose rock slope below me disappears right into the water. I'm wondering where I will stand when I reach the bottom. Olafur's voice keeps blasting over the walkie-talkie. "BLAH, BLAH, BLAH, BLAH!" He might as well be speaking Icelandic; I can't hear a thing over the river noise. At the water's edge, I lean hard against the cliff and throw the rope with all my might toward the other side of the river. The current takes it and carries it downstream. Dany comes up behind me a few minutes later, and we both hold the end of the rope.

Slam! It feels like we've hooked a 170-pound salmon. We can barely hold the rope against the force of the current. Then we spot Olafur, making his way across the frigid, rushing river, dressed only in jockey shorts—his clothes, boots, and equipment are stashed in a rucksack on his back. With water breaking over his shoulders at times, he goes hand-over-hand along the rope. I shake my head and think: these Icelanders are tough.

At every accessible nest site, Olafur weighs each young falcon, measures the length of its beak, wings, and tail feathers, and then places a numbered metal band on its leg. He then records the information in his field notebook, above left. Above, he bands a young falcon as one of its parents flies past the nest cliff.

Almost all the people you meet in Iceland—especially the farmers—are aware of the Gyrfalcon, or fálki, as it is called there. It's the national bird, but it seems even more important than that. I think Icelanders identify with this fierce, silver-gray warrior. Perhaps it's part of their Viking heritage. Icelanders tend to be extremely protective of these birds. If a farmer sees someone going near a Gyrfalcon eyrie, he'll invariably call the police. That's one reason Olafur always checks in with farmers as he's making the rounds of Gyrfalcon eyries.

Even the children in Iceland know about Gyrfalcons. A friend of mine was traveling through the country a couple of years ago when he spotted a Gyrfalcon diving at phalaropes along the shore of a small lake, not far from where a 12-year-old girl and her younger brother were standing. My friend, who happened to be wearing a Peregrine Fund T-shirt with a flying Peregrine Falcon printed in front, called excitedly to the children.

"Falcon . . . falcon . . . see? Like this," he said, pointing at his shirt.

The girl shook her head. "No, no."

"Yes, falcon," he insisted.

"No, *peregrinus*," she said, pointing at his shirt. Then, turning and pointing toward the

Gyrfalcon, which was still buzzing the phalaropes nearby, she said, "*rusticolus,*" correctly identifying the scientific names of both birds.

The Icelanders' relationship with the Gyrfalcon goes back to the Middle Ages, when these prized birds were exported to emperors and kings across Europe, where they were used for falconry. This practice continued right up to the French Revolution. In fact, the Danish king (Denmark ruled Iceland at that time) had a shipment of Icelandic Gyrfalcons ready to send to Louis XVI at the time he was snatched and eventually guillotined by the rebels.

Gyrfalcons almost always nest on lofty cliffs, laying their eggs on grassy ledges or in old raven nests, such as the one at far right. Getting to a Gyrfalcon eyrie usually involves climbing to the top of the cliff and then rappelling down to the nest ledge. Above, Dany, at right, unfurls the rope at an eyrie cliff as Olafur prepares to climb.

It's not surprising that Gyrfalcons have always been prized by falconers. They're spectacular hunters, with speed and stamina unsurpassed by any other raptor. Although Peregrine Falcons are famous for diving like meteors from colossal heights to clobber their prey, they lack the Gyrfalcons' ability to take off like a rocket and pursue prey unrelentingly in level or rising flight. And Gyrfalcons are huge: 25 inches in length compared with 20 inches for the peregrine. Gyrfalcons often cruise fast and low over the vast Arctic spaces, just waiting for an unlucky ptarmigan to appear.

In Medieval Europe, the quarry of choice for trained Gyrfalcons was the Grey Heron—a bird similar in appearance to a Great Blue Heron. Falconers would release their birds as the herons were flying past high overhead, en route to or from their feeding areas, and the falcons would fly after them, circling up powerfully as they fought to gain an altitude advantage over the larger birds. These flights would sometimes go for miles, with the royal spectators following at full gallop on horseback. After their capture, the herons were often rescued by the falconers and released after affixing a copper band (with the name of the falcon's owner and the year engraved on it) to the bird's leg. Some were caught again and again over the years. This may have been the earliest examples of both bird banding and a "catch and release" field sport.

From the front window of Olafur's home in Reykjavík, you can see the home of his country's president, across the water on a small spit of land. At one time, this is where the falcons were taken prior to being shipped to Copenhagen and then distributed to the royal courts of Europe.

Olafur has had an avid interest in birds since childhood. As a teenager, growing up in Reykjavík, he became friends with Finnur Gudmundsson, the father of Icelandic ornithology. Working as a field assistant with Gudmundsson in the early 1970s sparked Olafur's interest in Gyrfalcon and ptarmigan research. When he entered graduate school at Cornell University in 1980, Olafur—in association with Cornell professor Tom Cade—began a Gyrfalcon study in northeastern Iceland that continues to the present.

When he started this research, Olafur drove all over the countryside in his study area, talking to farmers and asking them if they knew where falcons nested. Many of them did, especially if the eyries were on or near their property. He documented more than 80 traditional Gyrfalcon territories, and he checks them at least once each spring. If the nests are active, he'll come back in late June to band and measure the young and again in August to see how many young falcons have fledged successfully. The land is rugged, with miles of jagged volcanic rock, making it difficult to visit and climb to more than two or three nests a day. It is meticulous, painstaking work. Some of the nests are too treacherous to climb to: lofty cascades of sharp, rope-cutting lava rock, with overhangs above the nest ledges. At these nests, Olafur uses a spotting scope to count the young.

It's funny; my first impression on meeting Olafur was that he is stolid and reserved—the quintessential Icelander. But I was completely wrong, about Olafur and his countrymen. On the backroads of Iceland, he is as gregarious as a traveling salesman, striding easily up to any farmstead, no matter how remote and at practically any time of day and night (no one there sleeps at night in the summer anyway), and engaging the farmers in lengthy conversations. Many farmers in these remote areas are starved for contact with other people and for news of other parts of the country. Iceland has an incredibly small human population—not much more than a quarter of a million total—and the vast majority of them live in or near the capital city, Reykjavík. These sheep farmers are about as cut off from civilization as you can get and still live in a house. Olafur has been making the rounds of Gyrfalcon eyries in this area since he was in his early twenties, and he's well known by the locals.

22 JUNE 1998: We stand on the banks of the largest glacial river I've yet seen here—a massive body of water flowing hundreds of miles from a vast glacier, far to the south. A great island with a sheer cascade of cliffs rises like an immense wall in the center of the river. Olafur explains that the only way for us to reach the eyrie is to wade across the river and around to the other side of the island, following it upstream a mile or so until we reach an area with a gradual slope that will allow us to climb on top of the island and make our way to the nest cliff. Olafur tells me that Hermann Goering, in the 1930s, sent a crack team of German agents to this very eyrie to get young Gyrfalcons for a national falconry organization he headed. Of course, they used a boat. We don't even have waders. Olafur says it will take four to five hours at least to go there and back—through bone-chilling melted glacial water. It's already seven o'clock and a frigid wind is blowing constantly from the north. Perhaps noticing the look on my face, Olafur mercifully excuses me from this mission. The weather is too bleak for photography anyway.

The last I see of them before I fall asleep in the cab of the truck, Olafur and Dany are rounding the end of the island, wading through chest-deep water, trying their best to hold their packs high enough to keep the contents dry. When I wake up five hours later, they are just making their way back to shore. Dany tells me I was wise to stay at the truck. It was awful. His feet are raw and bruised from the stream rocks he's had to stumble across, wearing only socks, and he's chilled to the bone. The cliff the falcons nest on also hosts a Northern Fulmar colony, and Olafur just missed being oiled a couple of times by the birds. These pretty white seabirds, with their soft, doe-like eyes, can really make a mess of you if they hit you with the noxious, foul-smelling oil they spit on their enemies. More than a few Gyrfalcons have been brought to the institute in Reykjavík, helpless and unable to fly after a direct hit with fulmar oil.

Dany is a lot different from Olafur, though they are both interesting field companions. He is an unreformed idealist, with strong views on most any topic that comes up. He tends to

More than four weeks old, the young Gyrfalcons, above, will soon be on the wing—the first young to fledge from this site in three years. Dany, at right, made this possible by coming here last winter and repairing the battered stick nest.

see the world in strict terms of black and white, good and bad, and he reminds me of some of my friends (and myself) in the 1960s. He's also a seeker, constantly searching for the perfect country—one in which the people live in harmony with nature. Dany's travels have so far taken him to the Yukon, where he worked for a year in construction, to several countries on the European continent, and now to Iceland, where he's employed as a carpenter and furniture maker. But he's becoming increasingly disillusioned with the attitude he says Icelanders have toward nature: that wildlife is a commodity to be harvested by humans. He is now talking about taking a train ride across Siberia, to see the Arctic from another continent, and then perhaps settling in Finland for a time. He recently heard a story that disturbed him, though, about a bear that was killed by a Finnish posse—after it had killed a jogger.

"You can't have wild animals killing people in urban areas. No nation in the world would put up with that," Olafur told him one day as we drove across an endless lava field left here by a centuries-old volcanic eruption. "Why not?" said Dany. "There are plenty of people in the world but not, I think, enough bears." Another day he asked me: "The people in New York, are they ecologists?" And I wondered if perhaps he was considering another migration to North America.

Dany is a great field assistant—eager and with boundless energy. An avid birder who loves Gyrfalcons, he first came here with Olafur last year as a volunteer, paying his own way. (Olafur's 21-year-old son was his main field assistant at that time, but he was unable to go out with him this June because of a leg injury.)

For the past two years, snowstorms came in late June, when the young were too large for the mother falcon to shelter adequately. Both times, all the young perished.

Olafur called Dany at the last minute before this trip, asking him if he would come along, all expenses paid. He agreed and used up most of his allotted vacation time to do so.

Dany visited one Gyrfalcon eyrie last season that had failed for a couple of years in a row. The nest ledge had a northern exposure and gave no protection from the elements when the wind blew down from across the Arctic Ocean, bringing frigid temperatures and foul weather. For the past two years, snowstorms had come in late June, when the young were about three weeks old and too large for the mother falcon to shelter adequately with her body. Both times, all the young perished. This pair had formerly nested nearby, in an old raven's nest on a sheltered cliff face. But the stick nest had fallen apart over the years and become too unstable to accommodate a Gyrfalcon adequately. Dany was so disturbed about what happened to the young falcons that he decided to do something about it. Last winter, he took a bus to this area, coming all the way from Reykjavík. A local fisherman drove him partway to the nest, but when the truck could go no farther, Dany took off overland on foot, across the snow, carrying various sticks, tools, and pieces of wire to the old raven nest. Painstakingly, in bitterly cold weather, he reconstructed the nest, making it sturdy enough to hold anything. He had his reward as we climbed the cliff and saw three large, healthy four-week-old Gyrfalcons sitting snugly in the stick nest.

23 JUNE 1998: At every accessible nest we visit, Olafur weighs each young falcon, measures its beak length, wing length, and tail-feather length, and writes all the figures down carefully in his notebook. He then scrapes up all the prey remains from the nest and puts them in a canvas bag. When we get back to the truck, he dumps the bones and feathers on the ground and spreads them out. "Here's a Rock Ptarmigan; this one's an Atlantic Puffin," he says, carefully sorting them and figuring out how many of each species are represented. "Look. Here's a ptarmigan leg with a band on it." He examines the number. "It's one of the ones I banded this spring." He smiles, like he's just met an old friend again.

I ask him about the puffin remains. This eyrie is in a completely dry, desertlike area, more than 20 miles from the sea. He tells me that Gyrfalcons routinely hunt long distances from their nests and carry their prey all the way back to their young. In areas like this,

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Lake Mývatn (below) provides a hunting area for at least 10 pairs of Gyrfalcons, some of which nest 12 miles or more away. Rock Ptarmigan, far right, are a favorite prey of Gyrfalcons. In early June, however, when the male ptarmigans stop displaying, the falcons start catching more waterfowl and other prey. Although falcons sometimes also catch Northern Fulmars (far right, below), these birds have a most effective defense—they spit a noxious oil at their attackers.

they have to. The enormous size of a Gyrfalcon makes it capable of carrying even duck-sized birds great distances. A puffin is easy.

Rock Ptarmigans are an abundant, relatively simple-to-catch food for Gyrfalcons in the early spring, when the cocks are displaying conspicuously everywhere, but the situation changes abruptly come early June. After their courtship displays are over, the male ptarmigans become secretive, spending most of their time hunkered down in cover. They even begin rolling around in small muddy depressions, rubbing red earth onto their sleek white wing feathers. All of a sudden, the ptarmigans you see look dirty and unkempt—but they also blend in excellently with their surroundings. Around June 5 or so, the number of fresh ptarmigan carcasses in Gyrfalcon eyries dwindles and the seabirds and waterfowl start piling up: Black-legged Kittiwakes, Atlantic Puffins, young Pink-footed Geese, and a variety of ducks. For many pairs, catching these birds means traveling a long way from their home territories.

Though Gyrfalcons have nesting territories that they defend vigorously from intruders, such as other Gyrfalcons, many of the hunting areas appear to be used communally by the birds—especially after the ptarmigan begin hiding. The Lake Mývatn area, for example, probably provides a hunting area for at least 10 pairs, some of which may nest more than 12 miles away. All their prey must be carried that far to their young.

24 JUNE 1998: As Olafur examines prey remains at another eyrie and writes them up in his notebook, I notice a huge pile of old bird bones not far from where he's sitting. For a moment, I wonder whether this is a favorite plucking perch for the falcons, but Olafur soon sets me straight. This is where he dumps the remains after inspecting them. I'm seeing the accumulation of nearly 20 years of prey remains from this eyrie alone, and it's impressive—both in terms of showing the hunting prowess of the Gyrfalcons and the depth of Olafur's determination to document these birds' activities on a decades-long scale. This is what is most meaningful and important about his work. He's providing a longitudinal study, over a substantial period of time, of a healthy population of predators and their prey.

Olafur has been able to document the dynamics of the up-and-down population cycles of the falcons and their primary prey species, the Rock Ptarmigan—the Gyrfalcon numbers always shadowing the rising and falling ptarmigan numbers, usually with a year or two delay in between. A picture is beginning to emerge of the close relationship between these

two species. Interestingly, the white-phase Gyrfalcons, which come to Iceland from Greenland each winter, do not follow the ups and downs of the ptarmigan population as do the gray Icelandic Gyrfalcons. Apparently, on their breeding grounds in Greenland, the resident Gyrfalcons' population cycles are tied more to the cycles of other species, such as lemmings, which are absent in Iceland.

Each year, after completing his late June banding trip in northeastern Iceland, Olafur returns in August, to see how many young Gyrfalcons have fledged successfully and are hunting in the nesting territories. His ptarmigan studies are actually now funding the work he does with Gyrfalcons, which goes hand in hand with the ptarmigan research. Money is easier to raise for ptarmigan study because they are popular gamebirds. It's important to be able to track the rise and fall of ptarmigan numbers to determine the effects of hunting—both by human and natural predators. Icelandic hunters take a considerable toll, on an individual hunter level, on Rock Ptarmigan. Unlike hunters in the United States, who have strict limits on the number of birds of a particular species they can take each day, Icelandic hunters face few restrictions, at least during the legal hunting season. Some hunters manage to shoot more than 100 ptarmigan a day, and some kill 500 to 1,000 during the entire season. A large percentage of the catch is sold commercially. The only reason that hunting pressure from humans hasn't had a significant impact on Rock Ptarmigan numbers yet is because so few people live in Iceland. But Olafur's studies have established vital baseline data on these birds, which should enable game managers to make sure that any declines in ptarmigan numbers fit the normal up-and-down patterns to be expected in their population cycles.

25 JUNE 1998: We drive through rugged terrain for most of the day, across vast lava fields, following the edge of a wide glacial river. It takes hours—traveling at times as slow as one or two miles an hour—to get to each eyrie site. I feel drowsy from a lack of sleep, but each time I start to drift off, the truck slams me hard against the side window or into the seat in front of me. (I'm crammed in the backseat of an extended-cab pickup.) A British birder, who was leading a tour group, once asked Olafur for directions on how to drive across the lava field we're on now. When he returned a few days later, the man said: "In Britain, they wouldn't let us walk on a trail like that, much less drive."

We stop to watch a Gyrfalcon eyrie, which is in a hole in a huge cliff face, across the river from us. The nest would be impossible to reach, even if we were on the other side of the river, so we gaze at the birds with a spotting scope. The adult female is completely oblivious to us, feeding her two downy chicks as we watch. Continuing along the river, we hear the roar of a huge waterfall, but it's so overcast we can barely see it. Photography is hopeless. A couple of hours later, we get to a Gyrfalcon eyrie on our side of the river and this time, for once, it's on an easy walk-in ledge. Olafur bands two young falcons, about three weeks old, as I snap some pictures—using an electronic flash to compensate for the lack of sunlight. We drive through the river in several places along the way, and Olafur tells us horror stories of people—mostly foreigners—who have met disaster trying to ford the highland rivers. Here's the river ford where a few years ago

a car was washed away, carrying four Japanese geologists to their deaths (they had tried to cross the river in the late afternoon on a warm day when the melting glacier produced a much greater flow of water than usual). And here's where a German photographer barely escaped the same fate by climbing through the window of his small car and onto its roof as it sped downstream, jumping to dry ground just before it crashed over a waterfall.

We finally come to a beautiful canyon. Before taking his pants off and wading across yet another icy torrent, Olafur tells us that we should climb to the top of the lofty cliff on our side of the gorge and hike several miles upstream, searching for a Gyrfalcon nest. He will do the same on his side of the river. In previous years, the pair had usually nested at the mouth of the canyon but there is no sign of them here this time.

It is a killer climb just to reach the rim of the canyon, and once we get there, the going is not much easier—a steep slope with loose rocks going all the way down to the brink of the precipice. As we walk several miles, we see cliff-nesting Pink-footed Geese, Common Ravens, and, finally, a Gyrfalcon. The nest is on our side, a long way up the valley, but we can't see it. Olafur counts the young with his scope. We can't even get close to the edge of the cliff at this point, because of the treacherous talus slope above it.

We make the long hike back to the truck exhausted. Backtracking several miles overland, we stay in a remote cabin that sheep farmers use during spring roundup. Olafur tells me that centuries ago, in Iceland's settlement period, a bustling community thrived here, but I can't see any trace of the former occupants of this remote valley. I look at my notes from the day. Going nearly constantly from early morning to past midnight, we have visited four eyries, but we only climbed to one nest and banded two birds. The other nests were inaccessible.

26 JUNE 1998: In the morning we drive to a long rift valley with massive fissures cutting deeply into the ground. I photograph a Common Raven nest with two nearly grown young and a Gyrfalcon nest with three live young and a dead one lying directly beneath the cliff in a snow bank. Though it looks fresh, the tiny nestling was a day old at best when it died; the other young are three weeks old.

Hours later, back at the truck, we drive farther south, then to another nest cliff after a lengthy cross-country drive over lush heathland. I photograph European Golden-Plovers, some with newly hatched chicks. I also take pictures of some female Rock Ptarmigans. The males I've seen so far have been too spooky to photograph. We band two more Gyrfalcon chicks and then head for the coast, where we camp out on some broad sand flats near the sea. Before we turn in for the night, we walk to a nearby Great Skua colony that Olafur needs to check as part of another study. The birds are huge—somewhat larger than Red-tailed Hawks—and amazingly aggressive. They attack us ferociously. I hold a stick above my head to fend them off, but still they come, sounding like howitzer shells whizzing inches from my head as they brush past. Some of them dive directly at me, looking me right in the eye without flinching or veering away as I wave my stick. I can imagine what it must be like for a fulmar or a kittiwake to be attacked by one of these super predators.

27 JUNE 1998: This is the most intense and draining day of the trip. Maybe it's the combined fatigue of the entire trip catching up with us. Maybe it's because we attempt to accomplish so much. We climb to eyrie after eyrie, banding falcon after falcon, as the weather turns worse and worse. As a freezing wind and shroud of fog move across the mountain we're climbing, I see the cliff looming high at the top. I'm amazed how far up it is, but as we reach what I think is the crest, I see that I'm mistaken. Another massive cliff rises in front of us, forming a great natural amphitheater on

A freezing wind blows across the mountain, bringing a shroud of dense fog and the threat of sleet, as Olafur and Dany climb (below). The massive eyrie cliff rises like a great amphitheater at the top of the jagged slope. It is so high that the safety rope doesn't even come close to reaching the bottom. Olafur glides silently down the rope to the nest ledge (at left) as fog moves in and out.

top of the mountain. As I hurry after Olafur and Dany, racing along 50 yards in front of me, I feel like a tired Sherpa, struggling with the weight of my camera gear, trying to follow Hillary and Tenzing as they near the top of Everest. I stop and take a quick picture of them disappearing into the fog near the summit. Visibility is decreasing by the minute. This is the biggest cliff we've seen yet. Although the 100-yard-long main rope reaches the bottom, the 50-yard-long safety line doesn't even come close. Olafur will have to unsnap the safety line from his belt and go the last 50 feet or so using the climbing rope alone.

I don't like it. Maybe I'm more paranoid than most climbers, but I once took a bad fall at a Prairie Falcon eyrie in California. Though I didn't suffer any permanent injuries, the force of my head hitting a rock broke my climbing helmet. I later gave the helmet to the climbing shop owner (appropriately named Cliff) who I had bought it from, and he displayed it proudly for years, bragging, "This helmet saved a guy's life." For a long time after, I would wake in terror, dreaming I was falling off a horrendous cliff. Although it took place more than 20 years ago, this experience has made me an ultra-cautious climber. And now, I feel uneasy about the climb Olafur is about to make.

"How will I know if the rope gets cut?" asks Dany. "You'll know," says Olafur, then he backs off the cliff into the fog and is gone.

Olafur ties a woven nylon belt around a huge boulder and attaches the main climbing rope and the safety rope to it on two separate carabiners. He tells Dany to pay out the safety rope slowly as he goes down, but to stop when he gets to the nest ledge—which runs for nearly 40 feet along the cliff face. He'll have to unsnap the safety rope, crawl along the ledge to the birds, band them, then go back and reattach the safety rope. From there, he'll climb to a lower ledge and stop to remove the safety rope again. It won't reach any farther. I am to station myself across the amphitheater from Olafur, to relay messages to Dany.

Before going over the cliff, Olafur says solemnly: "If the main rope gets cut by a sharp rock on the way down, Dany, try to hold me on the safety line until Tim can come around and tie the rope off shorter. I'm taking ascenders with me, and I'll use them to try to climb back up to the top."

"How will we know if the rope gets cut?" asks Dany. "You'll know," says Olafur. With that, he backs off the cliff into the fog and is gone. I go back to my station and wait. Visibility is getting worse and worse and the weather is getting chillier. I snap a few pictures as Olafur glides silently down the rope and the patchy fog moves in and out. He manages to band two of the three young birds, but the other one has moved so far away along the ledge that Olafur decides not to chase it. It's not worth risking his own life or that of the young

falcon to band it. When I see Olafur reach the bottom of the cliff, I take a deep breath and exhale slowly, leaning back against a boulder.

28 JUNE 1998: It has rained all night and is still overcast, though there is no rain now. We leave our camp area and drive to another eyrie; this one is on a massive cliff beside a road. Olafur and Dany drop me off at the base of the cliff so that I can point out the exact location of the nest ledge when they get to the top. It's a spectacular cliff. The safety line, again, will be far too short. Olafur and Dany drive several miles to an area where the cliff is easier to scale and hike to the stretch of cliff above where I'm waiting. It takes a couple of hours, during which time I take some telephoto shots of the falcon coming in with food to feed her young. The nest is so high up the cliff that the birds are fairly small in my viewfinder, even though I'm using a 500mm lens. It's the best I can do. I shoot a few frames of her. She doesn't seem disturbed.

Olafur finally appears above me. He looks about the size of a sparrow at the top of this precipice. I stand even with the nest ledge and point to it for him. A few minutes later, he begins his descent. People stop on the road to see what's happening. In one car, several pairs of compact binoculars peer out at the cliff, then at me, then back at the cliff again. One man calls to me from the car in Icelandic. "Blah, blah, blah, blah?" he asks, pointing upward at Olafur. "Fálki," I say, using my only Icelandic word. The man nods and says, "Blah, blah, blah, blah, yow."

After finishing with the birds, Olafur kicks off from the cliff and rappels to the ground in four or five huge bounds. Helping him with his equipment, I brush against the metal figure-eight on his climbing belt that the rope runs through; it is so hot it almost blisters my hand.

29 JUNE 1998: It's the last day of our trip and things are winding down. In the morning we visit a spectacular eyrie on a cliff on the rim of an ancient volcano's crater. It feels like we're on top of the world here. For the first time on this trip, the sky is clear and I can view (and photograph) an immense Icelandic vista. Olafur tells me there's a legend about the lake in the crater of this volcano. A magical horse called Nykur supposedly lives here, one that entices men to ride on her back and then carries them to the depths of the water, where they drown. The only escape is to speak the horse's name softly to her. We spend a couple of hours here, scaling the cliff and banding the young. I photograph the adult Gyrfalcons in flight and also take some pictures of Merlins at a nearby nest, farther along the volcano crater.

We visit one more eyrie as we make our way overland toward Akureyri. This one is across a river from us. The day is turning foggy again and it's difficult to count the nest's contents. We see at least one three-week-old nestling, but it looks like there may be more. We spend half an hour peering through the spotting scope, struggling to see clearly, and finally count three in all.

We stop at a great waterfall, called Godafoss, and sit at a small picnic table near the falls, shivering in the icy breeze as we wolf down sardine and cheese sandwiches and drink bad instant coffee. It's really over now, and we're all physically spent. We look like hell. I have a two-week beard and have probably lost 10 pounds. And I'm filthy. In a few hours, we'll be flying back to Reykjavík and at midday tomorrow, I'll be winging my way back to New York. It's been an amazing trip for me. Reading through my notes, I see we have visited 27 eyries, climbed to 18 of them, and banded 52 young Gyrfalcons—definitely a respectable showing for a week and a half of field work.

The falcon lands at her nest ledge, carrying prey to feed her young (far left). The nest is high on the cliff, making a 500mm telephoto lens inadequate to produce a decent-sized image. Physically exhausted, cold, and filthy, Dany and I (above) sit at the top of a cliff on the second to last day of our trip. Hard to imagine that we'll be sipping coffee in Reykjavík in less than 30 hours.

As I think back on Olafur, jotting down his copious notes below yet another Gyrfalcon eyrie, I see how well this fits the pattern of his countrymen. Icelanders are inveterate note takers. Since the dawn of their country, more than 1,000 years ago, they've recorded all the interesting aspects of their national life, in minute detail, in the various sagas dating from their early settlement days. Nothing is forgotten here. As we traveled the back roads (if you could call them roads) of Iceland, Olafur told us all the local gossip and lore of each area—bouncing easily from Viking times to the present and back again. Here's the cave where the outlaw, Grettir the Strong, hid centuries ago. Here's the Gyrfalcon eyrie where Hermann Goering's men came to take young falcons. Here's the river ford where the Japanese geologists met their fate. It's all there: remembered in the oral and written traditions of the people, to be spoken about for centuries—along with the tales about the itinerant ornithologist from Reykjavík who traveled these rocky roads for decades in the late 20th and early 21st centuries, in search of the fálki. ■

CAN THE EVERGLADES BE SAVED?

BY RACHEL J. DICKINSON

After decades of mismanagement, this spectacular American wetland is still in jeopardy—but its future may be looking brighter

> *There are no other Everglades in the world. They are, they have always been, one of the unique regions of the earth, remote, never wholly known.*
>
> — *Marjorie Stoneman Douglas*

Fifty-one years ago, President Harry Truman signed legislation to set aside half a million acres at Florida's southern tip, proclaiming the newly created Everglades National Park "for the use of all the people, for all time." Since then, the park has expanded threefold and now covers 1.5 million acres—a vast expanse of varying ecosystems, ranging from sawgrass prairie, freshwater sloughs, and marl prairie to pine forests and brackish mangrove swamps. It is home to an exotic array of animal life including alligators, crocodiles, and the nearly extinct Florida panther.

When most people think of the Everglades, however, they envision thousands of wading birds nesting in huge rookeries and feeding in the seemingly endless marshland. It is a paradise for bird watchers and bird photographers alike, offering spectacular views of many long-legged wading birds, such as White Ibises, Black-crowned and Yellow-crowned night-herons, Great Blue and Little Blue herons, and Roseate Spoonbills. But all is not right in wonderland. The park is threatened by man's constant tinkering with what has proved to be South Florida's most precious resource—water.

Stuart Pimm, an ecologist from the University of Tennessee, tells of vacationing with his family in South Florida last winter. "We were riding bikes along one of the boardwalks within the park and came across a group of Japanese tourists who were standing looking out over the water. Puzzled, they asked, 'Where are all the birds?' It was a striking moment."

Indeed, the numbers of some wading birds, such as Wood Storks, White Ibises, and Snowy Egrets, have dropped precipitously in the Everglades in recent years. What is responsible for these declines? Part of the problem can be traced back to 1947, when the national park was established. The government simply did not purchase enough land. As one person said, it was like buying the plunge pool of a waterfall and leaving people to do what they please upstream.

JEFF FOOTT

What could be a more appropriate symbol of the Everglades than a foraging Great Blue Heron? And yet, the numbers of these and other long-legged wading birds have been falling throughout this area in recent years. Is anything being done to turn around their alarming declines?

BHL

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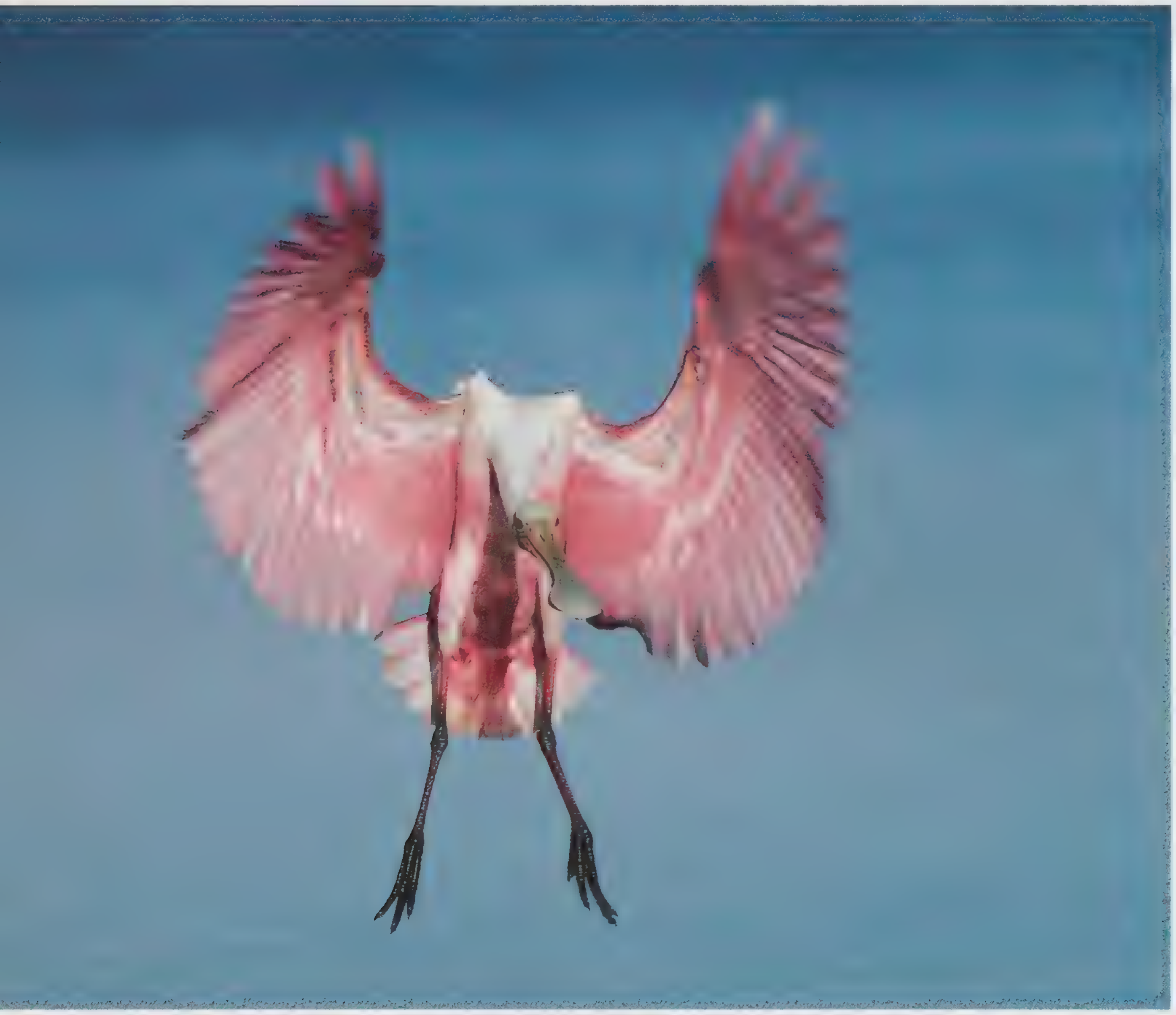
Even today, the park does not include the headwaters of the Everglades in the Kissimmee River and Lake Okeechobee.

After two hurricanes left parts of South Florida under several feet of water for up to six months, the federal government ordered the U.S. Army Corps of Engineers to fix the problem. Throughout the 1950s and 1960s, the corps carried out a massive flood-control project in South Florida. "Dike it, dam it, divert it, and drain it" was the motto of the day, and the corps engineers built what is now the country's largest water system: 1,400 miles of levees, dikes, pump stations, and canals. They straightened the 102-mile Kissimmee River into a 56-mile canal and drained 700,000 acres of wetlands south of Lake Okeechobee, creating the Everglades Agricultural Area, where sugarcane and other crops now grow. The remaining marshland was divided into conservation areas. The project was wildly successful in achieving its goal of flood control, but what was the effect of this water management on the Everglades and its natural system?



The Everglades now contains about 90 percent fewer wading birds than it did just a few decades ago.

For thousands of years, this part of South Florida had flooded annually when water overflowed the banks of Lake Okeechobee. A massive sheet of water, 50 miles wide, would flow south over the gently sloping land, covering and nourishing the vast sawgrass prairies. The most immediate effects of diverting this natural flow were to place water where it hadn't occurred traditionally and take water away from areas that had depended on it. This altered the geographic extent and the timing of the water, which now is strictly controlled by the artificial system.

In a short time, the ecology of the park began changing. Sawgrass followed the changing water distribution patterns, moving from the eastern edge of the park—which now receives little water—to the west. Agricultural runoff from the sugar fields in the north dumped phosphorous and nitrogen into the nutrient-poor prairie, causing a rapid growth of cattails—a plant species that grows so thick in some areas that wading birds can't even penetrate it. Fires routinely rage through the water-starved northeastern section of the park, burning vegetation right down to the limestone bedrock. Trees began moving into the dried-out marshes. Exotic plants invaded prairie land.

Another consequence of years of water management has been the precipitous decline of several species of birds within the park. Wading birds need seasons of wet and dry in order to nest successfully. Dropping water levels trigger the birds' nesting impulse, and then they need about three months of dry weather for their young to hatch, leave the nest, and learn how to forage for food. Raising or lowering water levels during the spring months (South Florida's rainy season typically begins in June) can have a disastrous effect on the wading birds.

Compounding this problem is the effort to save the Cape Sable Seaside Sparrow—a nonmigratory bird whose entire population resides in Everglades National Park. Like the now-extinct Dusky Seaside Sparrow, which became extinct in 1987 because of habitat destruction and pesticide use around the Kennedy Space Center, the Cape Sable Seaside Sparrow is a subspecies of the Seaside Sparrow, and it too may be facing a tragic fate.

According to Stuart Pimm, the foremost authority on the Cape Sable Seaside Sparrow, from 1993 to 1996 alone, approximately 3,000

BOBBY HARRISON

of these birds—more than half of their entire population—died out. The culprit? Three years of flooding and massive vegetation changes in their habitat.

"The Cape Sable Seaside Sparrow nests in wet prairies around the edges of the Everglades during the dry season," says Pimm. These are not sawgrass prairies, but marl prairies where vegetation grows right on top of limestone and is fed by groundwater percolating up through the rock. The surface is drier and closer to the edges of the park. As a result, these are the wetlands most likely to be destroyed by fire or converted into farmlands or housing developments. Because of their dependence on groundwater, these prairies also tend to be over drained during dry periods and flooded during wet years.

Between 1993 and 1996, the South Florida Water Management District, which controls water allotments in the southern part of the state, deliberately flooded the western marshes of the Everglades while keeping the eastern marshes dry in an effort to protect farms and houses. This action led to the degradation of a significant amount of the rare sparrow's habitat. The problem is that if the water is too high during breeding season, it soaks the nests of the sparrows and makes their eggs and young more accessible to rice rats and snakes. And sometimes an increase in the water level discourages the birds from even attempting to nest.

"Three populations of these sparrows exist in the Everglades," says Pimm. "In the west we are down to a couple hundred birds because of the three years of flooding. In the northeast, we have very few birds because fires have destroyed the prairie. And in the southeast, the population has held steady at about 2,500 individuals over about 50 square miles. But," Pimm cautions, "this is like putting all your birds in one basket—one big natural disaster like a fire or a hurricane could pretty much wipe out the Cape Sable Seaside Sparrow."

Pimm, who receives funding from the National Park Service and the U.S. Army Corps of Engineers, worked hard to get the South Florida Water Management District to withhold water from the western part of the park for several months in the spring over the past three years. And, according to Pimm, the prairie has never looked better. But the decision to hold back the water was extremely controversial. The water that would normally have been drained from the northern and central Everglades instead kept the nesting areas of many wading birds flooded. And the rain-soaking effects of El Niño only compounded this year's artificially high water levels in those areas.

This past April, wading bird counts in central and northern Florida were down by anywhere from 56 percent for Great Blue Herons to 99 percent for Glossy Ibises. A number of researchers declared that we were sacrificing the area's wading birds for the benefit of the Cape Sable Seaside Sparrow.

"We thought it was going to be really bad this year," says Marian Bailey, a wildlife biologist at the Arthur R. Marshall Loxahatchee National Wildlife Refuge, just north of Everglades National Park. "We had such high water levels, and then water was held in our area, which put us about a month and a half behind the traditional nesting schedule. The large wading birds such as Great Blue Herons and Great Egrets were showing nesting signs but the smaller ones were not congregating." When the water was released, however, the level went down quickly, triggering the birds' nesting impulse. That's when biologists started worrying about the coming rainy season, which could easily wipe out many of the young.

Fortunately for the wading birds of the Loxahatchee, the rainy season came extremely late this year. In fact, water levels got so low that Bailey, who censuses the wading bird population in the refuge, could not get into the interior to make a complete nesting count. "I guess Mother Nature had a way of providing for the birds this year," she says.

When you look at the decline in numbers of the wading bird population over the past 20 years, however, the picture that emerges is far from rosy. Even in a relatively normal year, the Everglades contains about 90 percent fewer wading birds than it did just a few decades ago. "This is not a wading bird issue but a water issue," says Bailey. And, ultimately, she's right. It's about nesting areas being too wet or too dry. It's about creating residential and agricultural areas out of former wading bird habitat. It's about trying to squeeze large numbers of birds into an Everglades ecosystem that was originally 2.9 million acres—before the U.S. Army Corps of Engineers crisscrossed the prairies and marsh lands with canals and levees and dikes.

"Overall, this was a disastrous year for wading birds in the Everglades," says Dale Gawlik, an avian ecologist and the senior environmental scientist for the South Florida Water Management District. Gawlik should know. One of his jobs is to pull together all the wading bird census numbers from all of the water conser-

The Cape Sable Seaside Sparrow (above) lies at the center of the latest water controversy. The entire population of this unique race of Seaside Sparrow lives in Everglades National Park. These birds seem to be declining precipitously in numbers and may be following in the footsteps of their now-extinct cousin, the Dusky Seaside Sparrow. In a controversial decision, water has been withheld from the western part of the national park during spring for the past three years—to benefit the sparrows. But some researchers charge that wading birds such as the Roseate Spoonbill (far left) are being sacrificed for the sparrows.

STUART PIMM

vation areas within the Everglades. Although he agrees that the wading bird population held its own in Loxahatchee, the birds were not as fortunate in many other areas.

What does the future hold for Wood Storks (above) and the other spectacular wading birds of the Everglades? Although the Everglades may never again have the millions of wading birds it once boasted, if a more natural water flow is restored to the area, the downward population trends of these birds could certainly be reversed.

BOB MACDONNELL

There is no doubt that Wood Storks, White Ibises, and Snowy Egrets have taken the biggest hits over time.

"It was a very wet winter and the cues for the birds to nest just didn't come in time for many of the birds," says Gawlik. Because water was held back for the benefit of the Cape Sable Seaside Sparrows, the possible nesting season of the wading birds was at least two months behind schedule and the numbers of birds that attempted nesting were way down. "Although there was a big nesting crash, we don't really know what the impact will be on the population. We think they can cope to some degree, and we're trying to find out if they're producing young somewhere else."

Gawlik thinks some of these species are selecting nesting areas over a much larger area than researchers previously believed. He cited a study in which blood samples were taken from Tricolored Herons in South Carolina and Georgia; a DNA analysis showed that they were the same birds that had formerly nested in the Everglades. This is good for the birds but not so good for the national park.

"There is no doubt that Wood Storks, White Ibises, and Snowy Egrets have taken the biggest hits over time," says Gawlik, "because these three species are the most constrained with regard to their nesting requirements." He cautions people not to compare this year's wading bird nesting numbers with last year's but to look at an average over time.

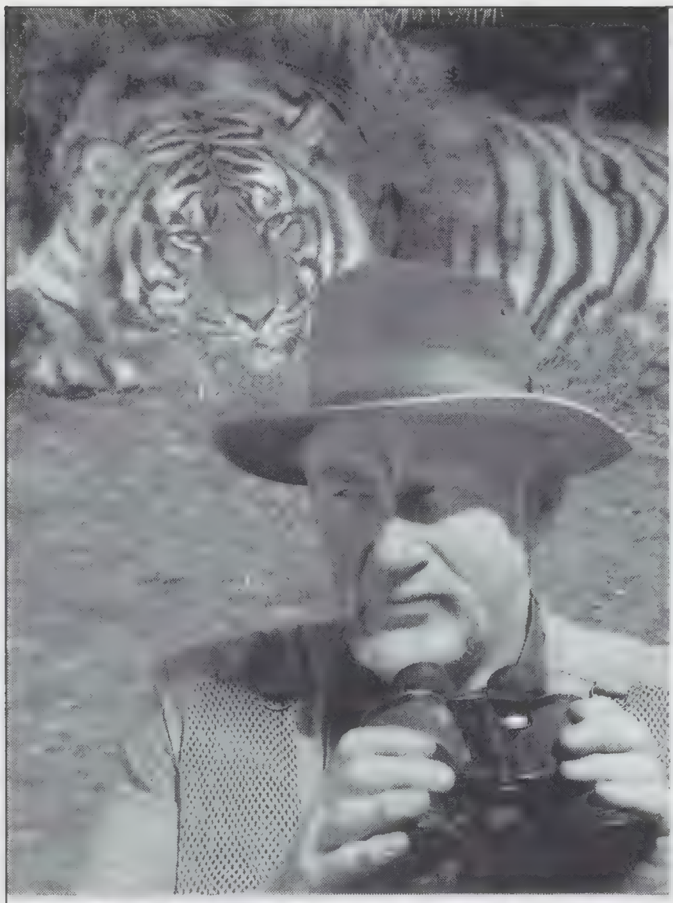
What does the future look like for the Everglades and its wildlife? Thanks to enormous public pressure, there is hope for the restoration of a natural system that has gone badly awry. The Nature Conservancy has named the Everglades one of its Last Great Places—areas deemed to have exceptional natural character. The National Audubon Society, original protector of the Everglades, has created the Everglades Restoration Campaign and is working closely with local conservation organizations. And, most importantly, the federal government has endorsed a huge restoration effort in the Everglades. Slated to cost about $2 billion when completed in 10 to 20 years—a cost to be shared by the state and federal governments—the plan is to restore the natural water flow to the Everglades. This will require purchasing thousands of acres of agricultural land below Lake Okeechobee, setting up filtration systems for agricultural runoff, and completely reengineering the complex water system developed in the 1950s and 1960s.

"I am personally very excited about the restoration plans," says Gawlik, "because we are reviewing the whole system and going back to square one." Finally, there will be an attempt to reevaluate how to operate the water system looking at all the users of the water—including the natural users.

Next year, as one of the first phases of the restoration, the structures will be in place to move water out of traditional wading bird nesting areas and into the Shark Slough basin, which will be good for the wading birds and will also protect the nesting area of the Cape Sable Seaside Sparrow. This restoration of a more natural water flow through the Everglades ecosystem should produce a marked improvement in the health and integrity of the ecosystem as a whole in the years ahead.

"I doubt that we will ever have millions of wading birds in the Everglades again," says Gawlik. "After all, we only have half the area we had in the 1920s. But I know we can do better than we have been doing. The only hope is that in the end, reasonable people will be managing the system and making reasonable decisions." ■

Rachel J. Dickinson is a freelance writer based in Freeville, New York. She frequently writes for this and other national magazines.



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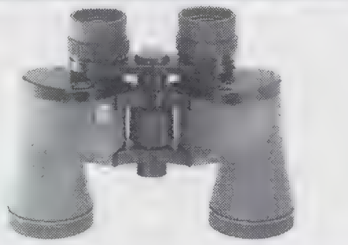

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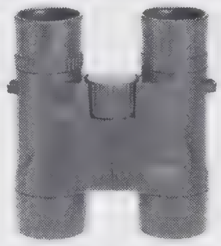

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PASSING THE VISION

By Kristi G. Streiffert

On tribal reservations across the nation, Native Americans are keeping alive their sacred tradition of respect for the land, creating effective conservation programs to protect wildlife and ecosystems

KRISTI STREIFFERT

TOM STREIFFERT

Biologist Bill Swaney (at left), who did graduate work in ornithology, heads the land resources management department for the tribes of the Flathead Reservation in Montana. At this and other reservations across the United States, vital conservation work is quietly taking place. Above, the Crow Reservation in Montana.

“Many of our traditional stories tell of birds like Nighthawk and Meadowlark,” says Bill Swaney, biologist and Native American. “But we tell those stories only in wintertime, so I can't really talk about them right now. I can tell you about my study site, though, where I monitored meadowlark nesting success.”

As we stand together in the blazing Montana sun, discussing Swaney's research, the songs of Western Meadowlarks ring out all around us. We are on the Flathead Reservation, home to the Salish and Kootenai Confederated Tribes. Swaney completed his graduate work near here, only three miles from where he was born and raised. He now heads the land resources management department for the tribes on the Flathead Reservation, and he relishes being on the cutting edge of conservation—not only in his homeland but as a leader in tribal conservation throughout North America.

“We are proud of the fact that we can go beyond even state and federal government agencies in some of our wildlife protection work,” he says. “Our GIS and mapping abilities are unequaled.”

Swaney's tribe, like hundreds of others throughout the United States, has spent the past two decades quietly making efforts to establish firm sovereignty and independence after many years of invasive federal management. For most tribes, this sovereignty includes coming to terms with wildlife and land management. One important step taken by the Flathead tribes in 1977 was to establish a wilderness area—the first in the nation to be managed directly by a Native American tribe.

The Mission Mountain Tribal Wilderness Area is inhabited by—and managed specifically for—grizzly bears. Another important achievement for this tribe was to gain control, through the federal courts, of the southern half of Flathead Lake. Now, 16 years later, this lake—one of the largest natural freshwater lakes in the West—is cleaner and development is more restricted than before.

Biologists continue working to restore and enhance the natural biological diversity of the reservation's ecosystems. Dozens of sharply focused projects illustrate the tribal wildlife department's commitment to conservation. They have thus far made surveys of elk habitat, reintroduced Trumpeter Swans to the reservation, studied loon population trends, and tracked the local grizzly bear population.

“One of my favorites was the nesting owl survey,” says tribal biologist John Gobeille. “We confirmed the nesting of eight forest owls, including Northern Pygmy-Owl, Northern Saw-Whet, Boreal, and Great Gray owls.”

At hundreds of reservations, scattered across

BHL

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the United States from Florida to California, important conservation work is quietly taking place. Hundreds of thousands of acres of wild land are being recognized as a precious heritage to tribal members as they watch the countryside around them becoming more and more developed.

"There is a lower human population here, so there is not as much development pressure," says Maureen Murphy, a biologist for the Colville Confederated Tribes of central Washington State. The Colville Reservation has some of the best bunchgrass habitat remaining in the region and holds one of the highest populations anywhere of Sharp-tailed Grouse—a threatened species in Washington. "Lands reserved for Native Americans are special because of the peoples' ties to the land. Their culture and the Sharp-tailed Grouse are more closely tied than you might think," says Murphy.

The elaborate courtship dances of these birds—which, at the time of the Lewis and Clark expedition, blanketed the area—inspired the Native Americans to create dances and costumes that mimicked the grouse. "We have a dance we call the chicken dance," says Barb Aripa of the Colville tribe. "In this dance, the men are honoring the grouse and the beauty of its dance. The grouse are special because not all birds dance for their mates."

Sometimes called the bustle dance because of the round feather bustles the men wear, the chicken dance imitates the birds' movements. "With their necks turning and twisting, almost looking double jointed, the men turn their heads like a male grouse looking for a female," says Aripa. "They move their feet in the same pattern, too." The tribe's strong cultural tie with this bird is one reason that the wildlife department on the Colville Reservation is keeping such a close eye on the local grouse leks and making management decisions based on what is best for the grouse.

"We plan to protect this habitat from disruptive land uses, and we hope to purchase some additional privately held winter habitat," says Murphy. She is hopeful about the tribe's future management of the grouse sites. "Here on the reservation, we are not as far removed from the decision makers as in a state or local government, and we have more communication with elected leaders. Sharp-tailed Grouse are an important piece of the landscape's integrity and an important part of Native American culture. We are committed to maintaining the best grouse habitat in the state."

All Native American tribes honor certain birds as part of their culture and religion, and they therefore are strongly motivated to protect them. Part of the traditional thanksgiving prayer of the Mohawk Nation in northeastern New York says, "We put our minds together as one and thank all the Birds who move and fly about over our heads. The Creator gave them beautiful songs. Each day they remind us to enjoy and appreciate life. The Eagle was chosen to be their leader. To all the Birds—from the smallest to the largest—we send our joyful greetings and thanks."

Even the name of the Mohawk community of Akwesasne—"Land Where the Partridge Drums"—shows the importance of birds and the natural world. Unfortunately, Akwesasne

TOM STREIFFERT (2)

CLIFF BEITTELL

is situated beside a highly contaminated toxic waste site. By necessity, this tribe has one of the most advanced environmental divisions of any in the country. The Akwesasne Task Force on the Environment (ATFE), a governmental and grassroots coalition, has been working to achieve the permanent cleanup of toxic waste sites bordering the community. ATFE projects include establishing education and advocacy programs, supporting sustainable development projects, conducting and supporting scientific research, and conducting letter-writing campaigns to the Environmental Protection Agency.

Of course, the entire array of wildlife, not just birds, holds important meaning for Native Americans. In Winchester, Idaho, the Nez Perce tribe has taken on the wolf recovery as its most conspicuous conservation project. The tribe, working in partnership with other organizations, built the Wolf Education and Research Visitor Center, a unique educational facility. The 20 acres surrounding the center serve as home to a pack of "ambassador" wolves, raised in captivity and never to be released. The goal of the center is to increase public awareness of the habitat needs of wolves.

Bringing back some of the wild creatures that have been lost is the goal of wildlife managers at the White Earth Reservation in northwestern Minnesota. Here, on their western prairie homelands, the Chippewa and Cree tribes historically shared the area with Trumpeter Swans and lake sturgeon, both of which disappeared there early in this century. "These animals had too much cultural significance for us to let them go," says tribal biologist Everett Goodwin, Jr. Over the past decade these tribes have participated in a Minnesota state project to restore Trumpeter Swans, and now the 150,000-acre reservation holds at least six nests on its lakes and marshes.

"Now we are going to work on restoring lake sturgeon," says Goodwin. The last of these huge fish on the reservation were caught in 1926. "These fish were a way of life for us in the past. We depended on them in our annual cycle," he says. The tribe is working with the Rainy Forest First Nation of Canada to reintroduce 8,000 fingerlings from that tribe's waters.

Conservation on tribal reservations in the

The number of feathers in their dance regalia shows the cultural and religious importance of birds to Native Americans (left). The chicken dance, sometimes called the bustle dance because of the round feather bustles the dancers wear, imitates the courtship displays of male Sharp-tailed Grouse (above).

TOM STREIFFERT (2)

Established by the Flathead tribes in 1977, the Mission Mountains Tribal Wilderness Area (above) is managed for grizzly bears. It was the first wilderness area managed directly by a Native American tribe. At right, the Wolf Education and Research Visitor Center, founded by the Nez Perce tribe in Idaho, aims to build public awareness about the habitat needs of wolves.

United States is not progressing without some setbacks and problems, however. Tribes have limited resources to develop, maintain, and regulate natural resource management programs. Enforcement, monitoring, and follow-through are always an issue. "When you have a limited amount of funds and many needs throughout the reservation, wildlife programs are going to struggle to maintain funding," says Goodwin. "My budget is limited and slim."

And just as with all environmental concerns, grassroots participation can be difficult to maintain, in spite of the sensitivity of many Native Americans to the needs of the land. Tribal governments and bureaucracies—yes, politics—are familiar stumbling blocks to activists. A frequent complaint of Native American activists is that tribal governments continue to put economic development above concern for the environment. "But we continue to work toward the goal of managing our lands for healthy soil and waterways and to pass that vision along to our youth," says Goodwin.

Passing the vision: that's where those wintertime stories come in for biologist Bill Swaney of the Salish tribe and for many other Native American tribes. In the time of the snows, during those long winter evenings, the stories are told and retold—of Meadowlark and Eagle and Grizzly. And with the stories is also passed on the ethic to preserve the animals and the land we humans share with them. ■

Kristi G. Streiffert is a freelance writer based in Coulee Dam, Washington. She frequently writes for this magazine.

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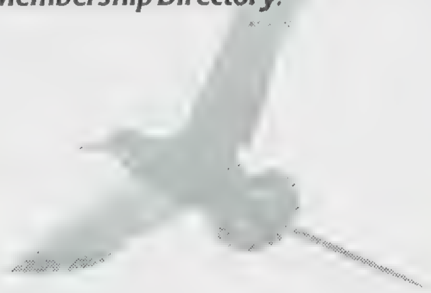

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OVER THERE!

Text and Photograph by Tim Gallagher

The grass is always greener on the other side of the ocean

You say you're tired of photographing the same birds over and over again? You need a change of scenery, but even taking a trip to the Everglades or Bosque del Apache isn't enough to get you excited? Sounds like you're stuck in the bird-photography doldrums, and the only way out is to pack up your gear, buy a load of film, and head out, leaving your familiar haunts in North America behind. The combination of new scenery, new habitat, and, especially, new birds, should provide just the dose of inspiration you need. Before you leave on your dream trip, however, you should be aware of some of the potential pitfalls of traveling with photographic equipment. By being prepared for possible disasters, you can help avoid them.

Probably the foremost danger is having your equipment stolen. One precaution you can take is to avoid checking in your most valuable equipment at the airport. Although I may check in a large item like a tripod, I always try to take my cameras, lenses, and film on board as carry-on luggage. Most airlines allow you to take one or two items of hand luggage, which you can stow in the overhead compartment or under your seat. I have a small, easy-to-transport suitcase with built-in wheels and a long, telescoping handle that will hold my 500mm telephoto lens, 10x40 binoculars, a couple of camera bodies, an assortment of smaller lenses, and a decent amount of film. Few airlines complain about the size or bulkiness of it.

You should, however, always call the airline you'll be using to find out their exact specifications for carry-on luggage. Some airlines are starting to restrict further the amount and size of the hand luggage you can carry aboard the plane. This can cause problems. A case in point: top nature photographer Kevin Schaefer recently went to the airport in Nairobi, Kenya, expecting to be able to board the plane with a camera case full of expensive photographic equipment. He found that the airline—a prominent European carrier—not only restricted the size and number of bags but also their weight, and the airline had a scale right at the gate. He was forced to check in all of his camera equipment. His gear was in a tough, waterproof, hard-shell case, so he wasn't too concerned about his equipment being damaged. But when he reached his destination in the United States and picked up his baggage, he discovered that almost everything had been taken—even though his case was still padlocked shut.

It's difficult to guard against this kind of nightmare completely, but you can certainly find out about an airline's baggage restrictions before booking a flight and, if necessary, travel with a different airline. You are also better off if you don't pack your gear in a recognizable camera case, as Schaefer did. Try getting a beat-up old suitcase and constructing your own camera case, installing cut-out foam to hold your equipment. Or perhaps place your entire camera case inside the older suitcase to make it stand out less on the baggage carousel.

You should, of course, have your camera equipment fully insured against theft, loss, or damage before leaving on a trip. Although camera insurance is expensive, it's worth it—for the piece of mind alone. Having to replace thousands of dollars worth of equipment out of your own pocket is unthinkable. Contact your insurance agent for more information. You may be able to attach a rider to your homeowners' insurance to cover your equipment.

An ongoing concern of most traveling photographers is the damage that airport security devices can inflict on unprocessed film, fogging it with penetrating x-rays. For a while it looked like things were getting better. The latest x-ray machines for inspecting hand luggage are fairly low powered, causing little damage to most films (although the effects are cumulative and if your film passes through them a few times you might be able to detect some fogging). Many photographers avoided this completely in the past by checking in all of their film with their luggage, which was rarely x-rayed.

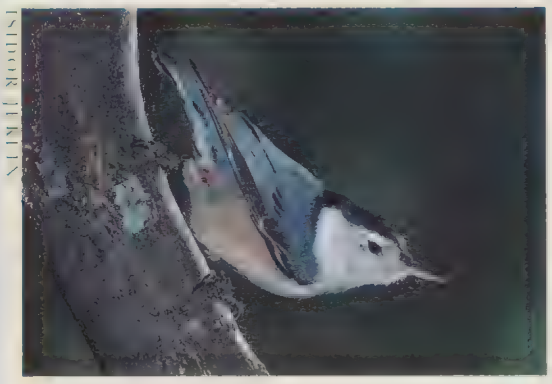
For photographic subjects you won't find at home—such as the distinctive race of Merlin found in Iceland—try an overseas excursion.

This all changed recently, however. A new, film-killing x-ray machine, the CTX-500, is currently being installed in many airports worldwide to examine checked-in baggage before it is loaded on a plane. Horror stories are already beginning to emerge. David Attenborough's television film crew, for example, had five weeks worth of film ruined by one of these machines at Britain's Manchester Airport. According to Kodak, going through this device once is enough to cause fogging in unprocessed film. And the lead-lined bags available at most camera stores don't help at all. When the CTX-500 detects an unusual or suspicious object, it bombards it with x-rays from different angles, revealing the offending object in image slices like a CAT scan.

The only ways to avoid having film damaged by this new security device are either to ship it with a commercial international carrier such as FEDEX or DHL or to carry your film on the plane with you as hand luggage. As I mentioned before, the x-ray machines that carry-on luggage must pass through are fairly benign—as long as your film doesn't go through them too many times. I always try to talk baggage inspectors into hand-examining my film instead of x-raying it. This almost always works in the United States, but the opposite is true almost everywhere else. If I know I'll be flying in and out of a lot of overseas airports, I pack my film in the lead-lined bags (which do seem to be effective at blocking x-rays from the security devices at airport gates), put them in a backpack, and let them go through the machine. The security personnel invariably demand a hand inspection, which is just what I wanted in the first place.

One last thing. To avoid the kind of problems that befell the American birders who were kidnapped in Colombia this past March (see "BirdNews," page 5), it's not a bad idea to call the U.S. State Department to see if any travel advisories or warnings are in effect.

I hope this litany of dire warnings doesn't frighten anyone from taking a trip overseas. If you go, you'll see fabulous birds and landscapes unlike anything at home. All you need is an adventurous spirit, the right equipment, and plenty of film. Bon voyage. ■



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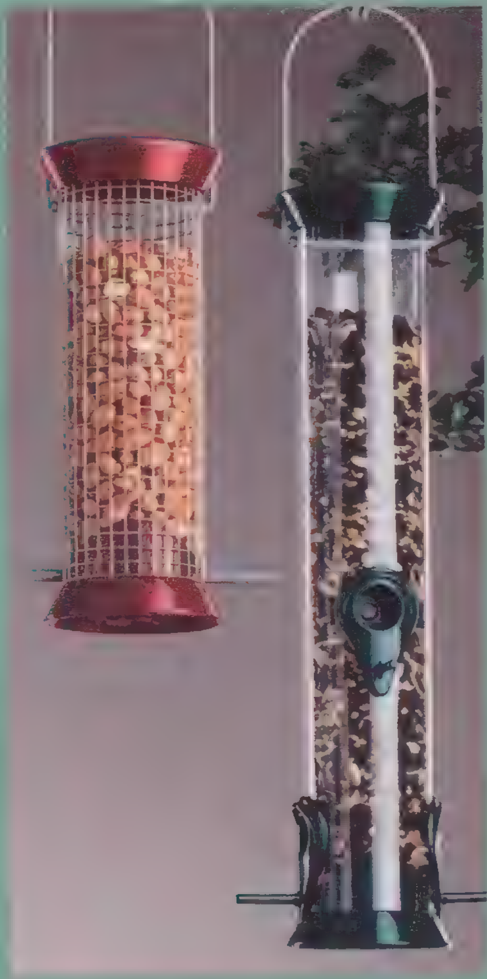

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DIRECTIONS, PLEASE

By Pete Dunne

Birding is a source of extreme gratification—and also the cause of considerable frustration. There are binoculars that will not focus close enough . . . field guides that never depict the birds you find . . . fellow birders eager to tell you about the bird you didn't find.

"You just missed it."

"Really?"

"Flew when you turned the corner."

"Really?"

"I've waited 30 years to see one."

"Really? I've waited 40."

But the greatest frustration a birder can be frustrated by is not the bird you missed, not the bird that has eluded you for "40 years," but the one you can't find RIGHT NOW because some direction-challenged companion cannot get you on the bird.

How many times have you stood there . . . strangling with anxiety . . . a life bird/year bird/good bird hanging in the balance . . . and had some simple, accomplished, sedated fellow birder chirp: "It's right in front of you."

I don't know about you, but I find the area encompassing "right in front of me" to be a very large place (encompassing about half the known universe). Somehow it is always my fortune to fall in with people who couldn't direct a compass needle to magnetic north and whose sense of refining detail is as discriminating as gravity.

What do I mean by this?

I mean that in response to my next "I don't see it," they will invariably reply, "It's in the tree."

I have learned to stop all inquiries at this point. Further inquiry only confirms that the tree the person is referring to is "the tree right in front of us."

"The one in the spruce forest?"

"Yes. That tree."

Sometimes, however, the birds I can't find are in clouds, not trees, and it is sometimes my fortune to be with people who are *too* specific with their directions to be helpful—people who can't see the forest for the four-sided needles, the altocumulus for the water vapor.

I recall an occasion when a well-traveled companion tried to get me on some fast-retiring raptorial speck in a cloud-filled sky.

"Do you see the cloud shaped like Ecuador?"

"Ecuador?"

"Well, the bird is in Quito."

"Where the hell is Quito?"

"Uh . . . forget it. The cloud just changed into Venezuela, and the bird's leaving Caracas for the States."

I don't have any greater fortune finding seabirds (or choosing sea-birding companions). Here's another drama in which I once played a subordinate role.

"I've got a gannet."

"Where?"

"On the horizon. One o'clock. Going right."

"I don't have it."

"Two o'clock."

"Don't have it."

"Now going left again. One o'clock."

"Still don't have it."

"Twelve o'clock . . . 11:45 . . . 11:40 . . . 11:35."

A.M. or P.M.? Okay, so maybe I'm just not good at finding birds. And maybe I should be grateful, because finding birds and getting people on them sets up a whole nuther problem—like accountability. What if your identification is wrong?

Here's a story about a bird-finding exercise that went right . . . then wrong. It involved two tour leaders, whose names will remain anonymous.

"Gyrfalcon!" the first leader exclaimed.

"Where? Where?" the group chanted.

"In the scope," the leader replied.

All of the participants took their turn looking through the scope, and then the other leader got his turn.

"I don't see it," he said, after a long, pensive study.

Surprised, the first leader looked again and announced, "It's right in the center of the scope."

Respectfully, the second leader peered into the scope again only to announce, "I don't see the Gyrfalcon."

Exasperated, the first leader commandeered the scope and looked again. "It's dead center," he announced.

Like a general sending troops into a battle that cannot be won, like a judge sentencing a friend for crimes that do not warrant punishment, the second birder returned to the scope, peered down the barrel, sighed, and asked, "Where is the Gyrfalcon in relation to the Snow Bunting?"

Now, if only I'd been second leader on this trip, there wouldn't have been a problem.

Or a story. ■

ILLUSTRATION BY JEFF SIPPLE

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